CHAPTER IV

AGRICULTURE AND IRRIGATION*

THE perennial flow of the Cauvery and its numerous tributaries had helped the lands in their alluvial valeys to bloom as fertile agricultural fields right from the prehistoric times. The eastern, southern and western parts of the district being on the edge of the ghats, were blessed with good rainfal. In addition to rain-fed agriculture, the canal and tank irrigated land also existed and thus agriculture and horticulture flourished to a considerable extent in the district during the historical times. The inscriptions of the Gangas, Cholas, Hoysalas and the Vijayanagara and Mysore rulers not only speak of tanks, canals, sluices and other means helpful to facilitate irrigation but also mention about the steps taken for the conservation of such means of irrigation like repair of embankment or desilting tanks. Reference to paddy fields, orchards and gardens of betel vine, coconut or arecanut are also numerous. Extension of agriculture by creating *agraharas* and granting lands to industrious scholarly brahmins who were sure to guide and supervise agricultural operations on academic lines are also seen. Efforts were made to settle agricultural families in new villages and help them bring more land under plough with care and protective supervision of the administration. The tradition of setting aside some land in every village as *bittuvatta* also appears to be very old in the district. Persons enjoying such land were charged with the responsibility of the upkeep of the village's irrigation facility. Cereals like paddy, jowar, *ragi* and *navane,* pulses, oilseeds like gingelly and castor and commercial crops like cotton, betelnut and sugarcane were grown. After the advent of the Portuguese, from the 17th century tobacco, potato, chillies and groundnut came to be raised. Hogesoppina Chavadi of the days of Chikkadevaraya indicates tobacco being an important source of state income and

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* This chapter also includes Horticulture, Animal Husbandry & Veterinary Services and Fisheries.

trade in it appears to have been a state monopoly. Tipu was responsible for introducing mulberry, but it could flourish only during the 20th century.

The Mamballi plates of the sixth century describe Punnadu (H. D. Kote tq region) as " resplendant with the Cauvery and the Kapini full of rich fields, full of buffaloes, cows, horses...." to indicate the flourishing state of agriculture and animal husbandry. One record from Belachalawadi of the 10th century speaks of *nellakki* being grown and an inscription of the 9th century from Tayur (Nj 313) mentions about a piece of land where jowar was once raised falling fallow and its being developed to raise fertile paddy crop. That irrigation was properly taken care of right from the Ganga times is indicated by the apportioning of *bittuvatta* at Kerehalli for the Shivayyana Kere of the place during the 9th century (Ch 352) or at Kalanahundi where a tank was excavated and *bittuvatta* land reserved in 993 A.D. At Ganiganur too *bittuvatta* was apportioned during the 9th century (Yl 178) that too in the command area (at the level lower than the tank). Excavation of tanks in Ganga times are spoken of in many records. The Gattavadi record says that there was a tank called Gallakkere prior to 904 A.D. excavated by some queen, and Shivayya a brahmin scholar caused the excavation of a huge tank which put the ocean to shame. This tank was fed by three rivulets called Bidirnama, Poolivalla and Manamma. It watered the *agrahara* village called Shivayya Mangala. At Elkur, when an individual excavated a tank during the 9th century, the ejcavator was granted land (Ch 81) for his service. At Puttagoudanahundi, a woman excavated a tank and she herself made *bittuvatta* grant (My 184). In 968, one Nagavarma granted land with the sowing capacity of four *khandugas* as *bittuvatta* for the Devigere and Piriyagere ('large tank') of Karyalur (Nj 282). In about 8th or 9th century there is reference to a sluice (*toobu*) being provided for a tank by a Ganga officer (Pergade) (Tn 313). One Sindhuvalli record also speaks of similar provision in 1106. The canals drawn from these tanks are also spoken of at Suttur in 1032 (Nj 215) or in the 13th century at Agara, where it was called 'Kulottunga Vaykal' after the Chola ruler (YI 95). Such references are numerous. Where there was no *bittuvatta,* a tax called *neeru kooli* was levied as referred to in a record from Chamarajanagar town (Ch 3). Raising of tanks and groves in memory of the deceased for his merit were also in vogue as seen from instances at Srivur (Gu 124) in 910 A.D. or at Bansipura Tavarekere katte in 1249 (Gl 187). For the merit of a deceased woman Ketagavundi, her children sunk a well and raised a grove at Doddhomma in 1296 (Nj 296). For the desilting of tanks, cart was provided, as indicated by an undated record from Gumballi (Y1 189).

Aragatta or some kind of persian wheel for lifting water was in use (Tn 238 of 1290) and one record of the 15th or 16th century from H.D. Kote tq mentions of canal (*kalu*), *kere* (tank), piccotah (*yeta*), basket (*goode*) and plough (*guyilu*), the necessary requisites of agriculture (Hg 19). An

inscription of 1502 A.D. from Hattavalu speaks of agricultural terms like *kadaramba* (crop dependant on rain), *gadde* (rice land), *hola* (dry land), *neeraramba* (irrigated land), *accukattu* (boundaries), *yeru* (tank bund) etc. (Nj 389.) "There was a mound (*dinne*), earth was removed and wet land of (the sowing capacity of) 10 *khandugas* was got ready", says a Hedathale record of 1314 (Nj 347).

Extension of agriculture by reclaiming land and settling people from outside is indicated in many records, in additionn to those connected with the creation of *agraharas*. One inscription of the 12th century says that "Kovara Ketagaunda of Tagadur came and converted Aridavalike into Ketanahalli and constructed a new tank...." etc speaks of one such instance (Hg 14). Similar efforts at new settlement by granting ceratin tax concessions etc. is evidenced in 1163 at Palyam (Ko 41) or Kemparaja Pattana, near Kamagere in 1354 (Ko 62) or Halli Hiriyur in 1408 (Ko 56). The Palyam record of the Hoysala times contains certain imprecatory sentences against those who were likely to leave the new settlement. This shows the difficulty faced by the administration in creating new settlements and also its eagerness to reclaim land. The Kamagere charter issued by prince Kampana of Vijayanagara, a local governor, grants many concessions to the new settlers including inheritance rights to the relations of the deceased. (Perhaps the area was infested with diseases like Malaria and people were not willing to stay). The Hali Hiriyur record assures protection to the settlers from likely harassment by corrupt revenue and other officials by announcing that "If the chiefs who hold office take some *hons* from the farmers (*okkalu*) of the village and (as a result of this) if they (farmers) flee, the loss also has to be paid by the said chiefs themselves". Such guarantee against emigration of farmers due to official harassment always existed, and during later centuries too, it was a part of general instructions of Tipu to his revenue officials. A sixteenth century record (Gu 86) says that hamlet Tenkanapura had been deserted and lands had fallen fallow. The wild plants grown there were cut and land was made fit for cultivation.

Extension of irrigation facility by royal efforts continued not only in the days of Vijayanagara, but under Mysore rulers too. Madhava Mantri, a Vijayanagara officer at Talakad, raised the famous Madhavamantri Katte between Hemmige and Mudukutore across the Cauvery in about 1341 and a record of 1633 speaks of it as "*Madarasa Vodeyara katte kaluve*" (Tn 183). There is an old *anecut* at Dhanagere across the Cauvery in Kollegal tq, and another at Ganiganur across the Suvarnavati, the latter ascribed to Ramarajanayaka of Hadinadu (16th century) by a record. A prince of Ummattur called Soma had built a tank at Uyymballi and called it Somasamudra, and a breach in it was repaired by some citizen from Arekothara (Chamarajanagar) in 1569. A record from Gundlupet tq (Gu 135) speaks of the creating of a new settlement (*hostagi puravanu katti*), excavating a

tank and raising a betelnut plantation in 1492. Each of the following villages (names as seen in the record) had a tank *viz.*, Arakothara, Maluru, Arakalavadi, Narasamangala, Hegavadi, Ankihalli, Hagula, Kodihalli, Kutanur, Vijayapura, Naluvura, Raghavapura, Edatale, Kelasur, Vodiyana and Sagade, as mentioned in an inscription of 1477 (Gu 149) and this gives us an idea of importance given to tank irrigation. The same record informs us that the area was full of betelnut plantations, and it gives us a list of 19 villages where there were such plantations in a single *nadu* (hobli) and Hatalukote village had 1,20,000 betelnut trees, Melur 60,000 and so on and the whole of these 19 villages had a total of 4,65,000 trees, as per details, provided from this one record which is a grant to the Triyambakapura temple. Another record of the 17th century (Ch 405) while assuring the supply of water to a land suggests that the peasant can raise crops of sugarcane and *kaaragenasu* (tapioca). There is also a reference to a coconut and betel vine garden at Harave (Ch 394). A Dasanur record of 1527 speaks of gardens and orchards of betelnut, coconut, jack fruit, mango, *nerilu, hirile,* orange, lemon, pomegranate banana, sugarcane and *kaaragenasu* (Nj 292). The Mysore rulers also continued to take proper care of irrigation. The creation of canal by directing the water of the Lakshmanatirtha is mentioned in a record of 1669 (Hs 32) and the tank is named Kanthirava Samudra. Tipu raised a bund, 70 feet high at Anandur in Mysore taluk. In the days of Purnaiah (Krishnaraja III), the Sagarakatte dam was raised across the Lakshmanatirtha. At Devanur, construction of a tank, Devarakatte is spoken of during the 19th century (Nj 279). Chunchanakatte has on old dam ascribed to one Chuncha.

Chikkadevaraja Vamshavali, a Kannada poem of the 17th century while describing Shrirangapattana, a town on the borders of the district, mentions 14 kinds of paddy grown there, *viz,* Kaniveyasanna, Satyagaladasanna, Goveyasanna, Punuguvasanesanna, Piriyarajanna, Jeerigerajanna, Segasurajanna, Kasturirajanna, Somashali, Bilumallige, Kembuti, Konevale, Pushpamanjari and Malalakanti. He also says that the place is full of orchards of fruits spoken of already and flower gardens of *molle, mallige, sampagi, suragi, surahonne* etc. Among the fruits, while speaking of banana gardens, he refers to Rasa, Putta, Raja, Deva, Kabba, Paccha, Nadu and Madhuralinge types. Thus the flourishing state of horticulture is indicated. Both Kanthirava and Chikkadeva had undertaken irrigation works at the Cauvery.

These prominent illustrations help us have a picture of the condition of agriculture, reclamation of land, irrigation and crops grown prior to the advent of the 19th century.

Dr. Francis Buchanan who visited parts of Periyapatna, Nanjangud, Kollegal and H.D. Kote taluks, gives an account of the state of agriculture in around 1800. He mentions three kinds of lands namely wet land producing wet crops by artificial watering, dry field which received no

artificial supply of water and produces dry crops and gardens or *bagait*. Farmers were growing two crops in a year, the first being *hainu* or rainy season and *caru* that grows in the dry season. The grounds were formed into terraces, surrounded by little banks for the purpose of irrigation. The plots were very contracted and irregular in shape. Cultivation of paddy was widespread as a wet crop.

Buchanan gives detailed information about paddy cultivation near Shrirangapattana and Periyapatna. He mentions three kinds of cultivation namely dry seed cultivation called *Bara butta* or *Punaji*, sprouted cultivation called *mola butta* and by transplating or *nati* cultivation. He speaks of different paddy varieties namely *Doda butta, Puttu butta, Bily sanna butta, Caracullu, Conawaly, Murarigilli, Sucadare, Arsina Cambuti* and *Hotaycaimbuti*. In transplanting either *barragy* or dry plants and *niragy* or wet plants were used. He speaks of preserving paddy in *hagay* or underground pit, *canajas* or store houses, *woday* or cylindrical stores and *muday* or bag made up of straw.

Regarding sugarcane, he speaks of *Rastali* and *Puttaputti* varieties and describes the mode of cultivation which does not differ much from the present practice, including ratoon crop. The wet crops included *uddu, hesaru, tadaguni* (*alsande*), and *hullellu*. *Ragi, avare, tovari, harica, navane, shame jola, huruli, karale* (bengal gram) and *haralu* were dry crops. He has given drawings of agricultural implements in use then. He speaks of the vegetable crops like, *badane, hiray, cumbala, swary* (sore), *hagala, padwala, bende, gori, chapparada avare, menashena* (chilly), *musucu jola, ghenasu* (sweet potato) etc. Plantations of coconut, betlenut, orange, lemon, banana, pomegranate, jack and mango are described. He also speaks of flower gardens in the vicinity of urban centres. Periyapatna region had betel vine gardens. Heggadadevanakote region had wheat fields and cotton.

Agricultural Population

At the 1981 census, there has been a three-fold classification of population *viz.* main workers, marginal workers and non-workers. Out of the total population of 25,95,900 persons in the district, 9,12,757 persons (35.16 per cent) are main workers. The number of main workers in the rural sector of the district is 7,08,758 persons (38.61 per cent of the total rural population). In urban areas, the corresponding figures are 2,03,999 persons (28.67 per cent of the total urban population). The percentage of main workers to the total population in the district is slightly lower than the State average of 36.76 per cent. Taluk-wise, Gundlupet has the highest work participation rate of 39.76 per cent while the lowest rate of 29.38 per cent is held by Mysore taluk. The predominance of agriculture in the economy of the district is substantiated by the fact that 46.37 per cent of main workers are cultivators. Proportion of agricultural labourers is also quite significant as they account for 22.17 per cent of the main workers. Thus

cultivators and agricultural labourers together account for 68.54 per cent of the main workers. The proportion is greater than the State average of 65 per cent. As compared to the State average of 3.48 per cent, the marginal workers in the district constitute only 2.61 per cent of the total population of the district. The ratio of male marginal workers to female marginal workers is 1.66 in the district. Agricultural operations like sowing, transplanting, weeding, harvesting etc. and animal husbandry provide greater opportunities for women-folk to work in rural areas.

The taluk-wise figures of total number of workers, agricultural labourers and their percentages are given in the Table given here under :

Taluk	Total main workers	Cultivators	Agricultural labourers
C. R. Nagar ..	1,02,345	45,575 (44.53)*	32,094 (31.36)**
Gundlupet ..	67,145	33,424 (49.78)	19,344 (28.81)
H. D. Kote ..	65,979	37,765 (57.24)	18,608 (28.20)
Hunsur ..	68,510	46,749 (68.24)	11,090 (16.19)
Kollegal ..	1,00,367	43,257 (43.10)	30,315 (30.20)
K. R. Nagar ..	64,221	40,652 (63.30)	12,763 (19.87)
Mysore ..	1,89,502	41,105 (21.69)	10,568 (5.58)
Nanjangud ..	96,757	49,291 (50.94)	24,529 (25.35)
Periyapatna ..	61,118	40,557 (66.36)	11,229 (18.37)
T. Narasipur ..	74,812	37,142 (49.65)	23,505 (31.42)
Yelandur ..	22,001	7,721 (35.09)	8,317 (37.80)
District ..	9,12,757	4,23,238 (46.37)	2,02,362 (22.17)

**Percentage of cultivators to main workers given in brackets
*Percentage of agricultural labourers to main workers given in brackets.

Land utilization

Land-use classification is primarily based upon whether a particular area is cultivated, grazed or forested. Its main purpose is to show the distribution in detail of existing land according to its actual use and not how a particular piece of land can be potentially utilized. Since 1950-51,

the land is classified into nine groups according to use. They are (1) Forest, (2) Land put to non-agricultural uses, (3) barren and unculturable land, (4) Permanent pastures and other grazing lands, (5) Land under miscellaneous tree crops and groves not included in the net area sown, (6) Culturable waste, (7) Fallow lands other than current fallows, (8) Current fallows, and (9) Net area sown. The total of these classes adds upto the reporting area. The following table gives particulars of land utilization in the district for the years 1961-62, 1971-72, 1981-82 and 1984-85.

Land Utilization in Mysore District

Area in hectares

	1961-62	1971-72	1981-82	1984-85
1. Geographical Area				
(a) According to professional survey	12,23,908	12,34,291	12,46,283	12,46,283
(b) According to village papers	11,32,774	12,34,291	12,46,283	12,46,283
2. Forests	3,09,744	3,24,184	3,33,913	3,38,461
3. Area under non-agricultural use	38,795	62,542	66,349	82,436
4. Barren and uncultivable land	84,790	79,033	77,577	67,292
5. Permanent pastures and other grazing lands.	1,48,179	1,70,588	1,40,753	99,123
6. Land under miscellaneous tree crops (not included in net area sown)	7,367	14,268	11,659	11,169
7. Cultivable waste land.	40,743	37,965	34,188	37,096
8. Fallow lands other than current fallows	40,595	47,577	34,704	37,586
9. Current fallows	23,723	23,308	44,732	44,632
10. Net area sown	4,38,838	4,74,826	5,02,408	5,28,488
11. Area sown more than once	56,834	83,379	10,884	81,643

Land holdings

Mysore district had the second highest number of operational (agricultural) holdings, 3.45 lakhs in the state in 1980-81. The total number of operational holdings for the district showed an increase of 0.72 lakhs over 1976-77 or by 26.50 per cent. The total area operated by these 3.45 lakhs holdings in 1980-81 was 5.52 lakh hectares as against an estimated area of 4.95 lakh hectares in 1976-77. The average size of an operational holding decreased from 1.81 hectares in 1976-77 to 1.60 hectares in 1980-81. Operational holding refers to all land used wholly or partly for agricultural production as one technical unit by the same person or persons. During 1980-81, Mysore district had the largest number of individual holdings in the State. The percentage distribution of number of holdings and the area operated by the type of holding was as follows : Individual holdings 99.3/98.9. Joint holdings 0.44/0.71 and Institutional holdings 0.26/0.39. Mysore district had 7.66 per cent of the number of holdings of the State in 1970-71 and the corresponding figures for 1976-77 and 1980-81 were 7.16 per cent and 8.01 per cent. The percentage of area operated in the State for the district in 1970-71, 1976-77 and 1980-81 was 4.52 per cent 4.36 per cent and 4.7 per cent respectively.

Taluk-wise distribution of land holdings by size during 1980-81 is given in the following table.

Distribution of Land Holdings

Taluk	*Marginal holdings* (<1-0 *ha*)		*Small holdings* (1-2 *ha*)		*Semi-medium holdings* (2-4 *ha*)		*Medium holdings* (4-10 *ha*)		*Large holdings* (> 10 *ha*)	
	No.	*Area*	*No.*	*Area*	*No.*	*Area*	*No.*	*Area*	*No.*	*Area*
1	2	3	4	5	6	7	8	9	10	11
C.R. Nagar	18,271	9,322	11,168	16,113	7,138	19,645	3,035	17,175	341	4,746
Gundlupet	8,657	4,972	7,755	11,256	5,249	14,450	2,428	14,186	373	5,412
H.D. Kote	8,370	5,094	13,330	19,449	5,681	15,313	2,223	12,613	238	3,165
Hunsur	15,276	8,426	11,049	16,215	5,732	15,596	2,286	13,047	232	3,284
Kollegal	16,432	8,696	12,803	18,756	6,856	18,096	1,950	11,011	239	3,985
K. R. Nagar	19,557	8,919	7,500	10,585	4,002	10,820	1,376	7,601	97	1,425
Mysore	13,972	7,353	9,464	13,697	5,575	15,299	2,089	11,667	179	2,573
Nanjangud	20,491	10,715	12,246	17,526	7,092	19,336	2,660	14,950	266	3,884
Periyapatna	8,752	4,512	7,622	11,206	4,927	13,587	2,308	13,524	416	6,788
T. Narsipur	22,741	10,612	8,895	12,559	4,623	12,566	1,536	8,516	178	2,537
Yelandur	7,025	2,389	1,520	2,145	746	2,080	279	1,622	36	517
District	1,59,544	81,010	1,03,352	1,49,507	57,621	1,56,788	22,170	1,25,912	2,595	38,316

Agro-climatic Zones

Mysore district has been divided into two Agro-climatic zones *viz,* Southern Dry Zone and Southern Transition Zone. *Southern Dry Zone* comprises of eight taluks namely Chamarajnagar, Gundlupet, Nanjangud, Kollegal, Yelandur, T. Narasipur, Mysore and Krishnarajanagar. The annual rainfall ranges from 670.6 to 888.6 mm of which more than 50 per cent of rain is received in Kharif season. As such it is a Kharif zone. The elevation is 800-900 metres in major areas and 450-800 metres in remaining areas. The soils are red sandy loams in major areas and black soils in pockets of remaining areas. The principal crops grown are paddy, *ragi,* pulses, minor millets and sugarcane. *Southern Transition Zone* consists of Heggadadevankote, Hunsur and Periyapatna taluks. The annual rainfall ranges from 611.7 to 1053.9 mm. More than 60 per cent of rain is received in pre-monsoon and monsoon months. Thus it is also a predominantly Kharif zone. The elevation is 800-900m in major areas. 900-1500 metres in some parts and 450-900 metres in the remaining parts. Soils are red sandy loams in major areas and red loams in the remainiug areas. The principal crops grown are paddy, *ragi,* pulses, jowar and tabacco.

Soils

The soils of the district are predominantly red loams and are derived from granites and gneisses and vary from pure sandy soils to typical black cotton soils. There are patches of schists in Tirumakudlu Narasipur. Yelandur and Chamarajnagar taluks. The western taluks of Periyapatna, Hunsur and Heggadadevankote are covered with hilly terrain and contain red shallow gravelly soils. The taluks of Chamarajnagar, Yelandur, Gundlupet, Kollegal and Tirumakudlu Narasipur contain deep red loams, occasionally interspersed with black soils. The red soils are generally shallow to deep, red to pale brown in colour, well drained, may not contain lime nodules at depth. The black soils are shallow from four to five feet in depth, contain lime nodules rich in bases with good water holding capacity. The red soils are usually underlain with a loose yellow koalinitic decomposed rock, generally called *murram* which facilitates ready drainage while black soils underlain with porous rocky substratum are rich in bases and high waterholding capacity.

The soils of the district are generally alkaline to neutral in reaction. There are few acidic soils in the district. The soils in all the taluks are normal in pH except Chamarajanagar, Gundlupet, Yelandur and Tirumakudlu Narasipur where they are alkaline. In these soils, the soluble salt content is normal, the organic matter content is high, the availability of phosphorous is poor and the soils contain variable amounts of potassium.

Soil Health Centre.—The Soil Health Centre at Nanjangud was started in 1981 to collect and analyse soil samples, to test the suitability of water

for irrigation and to know the purity of liem and gypsum. It also imparts training to field staff and farmers in collecting soil and water samples and implementing recommendations. The Centre is well equipped to analyse 30,000 samples in a year. The number of soil samples analysed in this centre were as follows: 31,265 in 1980-81, 23,722 in 1981-82, 30,560 in 1982-83, 30,602 in 1983-84, 30,507 in 1984-85, 26,930 in 1985-86 and 22,539 in 1986-87.

The Soil and Water Management Training Centre was established on 14th March 1973 to train the Departmental persons especially Assistant Agricultural Officers in soil conservation and soil and water management. In all 813 Assistant Agricultural Officers and 115 Agricultural Officers were trained in the Centre from 1st December 1973 to 15th May 1986. During 1986-87, 53 Assistant Agricultural Officers and 15 Agricultural Officers were trained, incurring an expenditure of Rs. 3.43 lakhs.

Agricultural Research Station, Nagenahalli.—The Agricultural Research Station at Nagenahalli was established in the year 1917 as a demonstration farm for conducting research work on the main crops of the region *viz.* paddy, sugarcane, *ragi* and groundnut. During 1963, the station was converted into the Central Paddy Research Station of the state. During 1965, the Station was transferred to the University of Agricultural Sciences, Bangalore and renamed as Medium Research Station. Seed production of high-yielding paddy varieties, conducting of paddy varietal and agronomical trials and working out the economics of mixed farming and employment potential are the main objectives of the research station. The total area of the farm is 25 ha of which 16 ha are provided with irrigation facilities. The varietal improvement carried out from time to time is as follows: S-189 (Alur sanna), S-139 (Kaddibatha), S-246 (Nagapursanna), S-669 (Coimbatore kaddi), S-661 and S-701 (Coimbatore sanna), S-718 (Ratanchooddi), S-749 (Ratanchoodi), B-16 (Togarina), B-1370 (Puttabatha), B-194 (Muskathy), B-21 (Bilikannahegge), B-294 (Doddabyre), H-497 (Bangarathega), H-320 (Hunasehoovinabatha), S-1092 (Bangarakovi), CH-2 (Chinabatha), SR-26-B (Vonduvarebatha), S-2222, S-1904 and S-1944 (Indo-Japanica) and J-192 (Jenugud). There is a scheme in operation entitled 'Development of improved paddy varieties' in collaboration with Central Food and Technological Research Institute, Mysore.

Agricultural School.—There is an Agricultural School at Nugu in the district and training in agricultural field is being imparted to the farmers of the district. During 1985-86 the school has been temporarily closed due to repairs of school building. Trainees are paid a monthly stipend of Rs. 150 per month.

CADA Cauvery Basin Projects

The Irrigation Commission set up by the Government of India in their report of March 1972 had analysed the problems and made specific re-

commendations in respect of the need for systematic development of command area in the country. The State Government constituted the Command Area Development Authority (CADA) of the Cauvery Basin Projects at Mysore during 1974 to ensure rapid and optimum utilization of irrigation potential created through major and medium irrigation projects. CADA has taken up comprehensive development of command area in coordination with several development departments like Agriculture, Irrigation, Horticulture, Fisheries, Forestry, Animal Husbandry, Sericulture, Co-operation and Marketing.

The CADA Act 1980 made CADA an autonomous statutory body. At present the jurisdiction of CADA Cauvery Basin Projects extends over 27 taluks of Mysore (10), Mandya (7), Hassan (4), Kodagu (1) and Tumkur (5) districts. In Mysore district, except Gundlupet taluk, all other taluks are covered by the Authority. The irrigation projects included under CADA are Krishnarajasagara, Nugu, Kabini, Harangi and Hemavathi. The irrigation projects to be included under CADA are Manchanabele, Suvarnavati, Chickahole, Gundal, Nallur Amanikere, Votehole, Yagachi and Taraka. The areas that get irrigated in the district by the Project under CADA in hectares are as follows: Kabini-42,490, Nugu-10,500, Harangi-43,429, Hemavati-2,266 and Krishnarajasagar RBC-29,319. The areas irrigated by the projects to be included under the CADA in the district in hectares are as follows: Suvarnavati-2,830, Chikkahole 1,610, Gundal 4,050, Nallur Amanikere-1600, and Taraka 8,900. The major functions of the CADA are, conservation of land and water, construction of field irrigation channels and field drains, on-farm development, adoption of *warabandi* system for proper distribution of water, adoption and enforcement of suitable cropping pattern and all-round development of areas pertaining to agriculture, horticulture, sericulture etc. The total expenditure incurred during 1984-85 on all schemes amounted to 210 lakhs of rupees. CADA provides finance to the development departments for infrastructural development of command area. In addition for research studies, University of Agricultural Sciences and Institute for Social and Economic Change have been involved in CADA activities and studies have been entrusted to them.

Supply and Service

Seed.—The Agricultural Department is maintaining four seed farms to produce and distribute the foundation seeds. The breeder's seeds required for production of foundation seeds are obtained from agricultural research stations maintained by the University of Agricultural Sciences. The foundation seeds and quality seeds are processed in the Seed Processing Units to upgrade the seed quality located at Haradanahally and Inkal, the former being maintained by the Department and the latter by a private agency. The production and distribution of quality seeds of hybrid and high-yielding varieties are being taken up to to a greater extent by the Karnataka State Seeds Corporation supplemented by the Karnataka Agro Industries Corporation, National Seeds Corporation and Private seed production agencies. During

1986-87, certified and labelled seeds of about 15,000 quintals of cereals, 1,700 quintals of pulses, and 2,600 quintals of oil seeds were produced and distributed to the farmers of the district. The Karnataka State Seed Certification Agency provides the supervision and control of seed production and also certifies the seed produced in the specified manner.

The Seeds Act 1966 and Seed Rules 1968 have been brought into force in the district from the year 1969. The Seeds Act plays an important role ni regulating the quality of seeds offered for sale. During the year 1986-87 1,755 seed samples were drawn and sent for analysis at Seed Testing Laboratory, Hebbal. Out of these, 127 samples were sub-standard ones. The sub-standard seeds were removed from salepremises immediately after getting the results. The Government of India has inculded seed marketing under Essential Commodities Act and 'the Seeds (Control) Order 1983' is enforced in the district from 30th December 1983.

A few particulars about seed farms in the district are given hereunder:

Name of the Seed Farm and Taluk	*Year of starting*	*Total area in ha.*	*Area available*	
			Dry	*Wet*
1. Bylakuppa Periyapatna tq.,	1961-62	84.98	26.30	2.02
2. Haradanahally Chamarajanagar tq.,	1957-58	10.12	4.05	5.26
3. Nugu Heggadadevankote tq.,	1958-59	16.75	6.54	5.26
4. Ratnapura Hunsur tq.,	1958-59	13.35	6.47	5.26

Manures and Fertilizers : The excreta of oxen, sheep and goats form the chief manure used in the district. The manure is kept in open pits outside the village. It is usual to cart earth either from the dry tank beds or good red earth from the fields to the manure pits where the manure is covered by thick layer of this earth. The earth from old village sites is also utilized as manure. This is a light ashy coloured earth excavated from the sites and called as *sudimannu* or ashy earth. Ashes of all kinds are freely used as manure. Special schemes like production of urban and rural compost and conservation of cattle urine are implemented and efforts are being made to produce quality compost. Under local manurial resources programme, 7,39, 126 tonnes of rural compost and 1,27,303 tonnes of urban sompost were prepared 57,095 ha were covered green manure crops ; and rhizobium culture was used for pulses and oil seed crops in an area of 18,,000 ha, all in the district during 1986-87. The green manure crops comprise of *honge* (*Pongamia glabra*), *tangadi* (*Cassia auriculata*), *yekka* (*Calotropis gigantes*), sunnhemp, horse gram, cowpea, green gram, blackgram, etc.

Commercial manures like oilcakes of *honge*, castor and groundnut, and bone meal to a little extent are in use in the district. Gypsum was used as a soil amendment in an area of 16,000 ha, during 1986-87.

Fertilizers have been in greater use in recent years as the area under irrigation is increasing and due to the introduction of high-yielding varieties. Fertilizer promotion programme has been extended to the district in 1980-81 with an objective to popularise the balanced use of fertilizers and to increase the offtake of fertilizers. There were 769 fertilizer sale points in March 1986 and 57 more sale points were opened during 1986-87. About 3,050 tonnes of fertilizers were distributed at 96 villages by Karnataka Agro Industries Corporation, Karnataka State Co-operative Marketing Federation Limited and Mangalore Chemicals and Fertililers Ltd. The Fertilizer (Control) order, 1957 was promulgamated under Essential Commodities Act 1955 to regulate the quality, prices and distribution of fertilizers. About 324 fertilizer samples were drawn and 265 samples were analysed during 1986-87. Out of 265 samples, 35 samples were sub-standard ones and suitable legal action has been taken in such instances. The fertilizer consumption per hectare increased from 32.5 kg (1973-74) to 74 kg in 1985-86.

Consumption of Fertilizers in tonnes

Year	*Nitrogen*	*Phosphorous*	*Potash*	*Total*
1975-76	7,532	2,142	2,332	12,006
1979-80	13,436	8,147	5,208	26,791
1981-82	16,004	9,595	6,214	31,813
1983-84	12,296	8,101	4,827	25,224
1984-85	15,361	10,149	7,608	33,118
1985-86	19,335	10,116	8,312	37,763
1986-87	18,931	11,044	9,813	39,788

Plant protection.—Plant protection has gained special importance after the introduction of high yielding varieties. During 1986-87, against 2.18 lakh hec tares targetted under various categories of plant protection measures, an area of 2.9 lakh hectares has been covered, the details are as follows :

Category	*Programme*	*Area in ha. Progress*
1. Seed treatment ..	1,20,000	98,990
2. Control of field rats ..	20,000	21,660
3. Control of soil and Polyphagous pests	10,000	11,200
4. Plant protection measures for other pests	65,000	74,700
5. Chemical seed control ..	3,000	2,315
	2,18,000	2,08,865

As per the Karnataka Agricultural Pests and Diseases Act 1968 and Rules, 1971, 64 pesticide samples were drawn and sent for analysis at the Pesticide Testing Laboratory at Bangalore. During the year 1986-87 two insecticidal trials were laid out on paddy and *ragi*. Monthly forecast on the occurrence of insect pests and diseases of economic importance and thier control measures is being issued every month for the use of the farmers in the district. The Karnataka Agricultural Pests and Diseases Act 1968 is enforced in the district to prevent the introduction, spread or reappearance of pests, plant diseases and noxious weeds injurious to crops, plants or trees.

Agricultural Implements.—The implements and other agricultural appliances in use in the district are numerous and are of great interest. There is hardly a single agricultural operation of any importance which has no appropriate implement. Next to their number and variety, their chief characteristic is their simplicity and efficiency and they can be easily manufactured and repaired locally. Most of these implements are suited for individual ownership and a holding of few hectares. The following table gives the taluk-wise number of different agricultural implements and machinery used in the district as on 1983.

Agricultural Implements in the District — 1983

Taluk	*Wooden plough*	*Blade harrow*	*Disc harrow*	*Steel plough*	*Cart*	*Electric pumpset*	*Tractor*	*Other implements*	*Total*
C. R. Nagar ..	15,998	789	9,109	3,834	5,078	1,362	12	2,051	38,233
Gudlupet ..	24,043	3,275	17,447	4,209	5,225	782	15	4,221	59,217
H. D. Kote ..	27,639	1,931	24,513	2,713	5,722	178	10	7,373	70,079
Hunsur ..	24,066	1,707	17,119	4,924	4,188	219	32	4,328	56,583
Kollegal ..	25,072	5,209	13,229	3,678	6,337	3,407	24	14,943	71,899
K. R. Nagar ..	21,094	1,794	14,104	9,956	6,506	137	20	5,565	59,176
Mysore ..	9,742	1,747	8,065	1,000	2,439	141	8	5,943	29,085
Nanjangud ..	35,641	2,933	24,288	5,741	7,628	584	23	10,842	87,680
Periyapatna ..	26,430	2,082	17,256	2,116	4,797	83	83	11,757	64,604
T. Narasipur ..	15,665	1,732	7,208	5,984	6,195	423	20	5,895	43,194
Yelandur ..	4,057	1,209	2,947	1,167	1,691	517	1	2,812	14,401
Total ..	2,29,447	24,408	1,55,357	45,322	55,806	7,833	248	75,730	5,94,151

Cultivation seasons.—The cultivation season comprise of two monsoons for the bulk of the crops in the district. In areas under well and larger tank cultivation, land will be found to be under some crop or the other throughout the year. In general practice, the following well marked seasons are observed : (1) The *kar* or early monsoon season, beginning in the month of April and May, (2) The *hain* season or monsoon season beginning in June and (3) the *hingar* commencing in September and October. The *kar* crops are followed in the same year with *hingar* crops or by a fallow. The *hain* crop form the only crop of the season as they are harvested too late for growing a *hingar* crop. The *hingar* crop may either follow *mungar* crop or be the only crop of the year. In case of paddy, the seasons are called Kartik and Vaishak, the former being the monsoon crop i.e. being sown from July onwards and harvested by December ; and the latter sown from December onwards and harvested in April and May The agricultural year which begins roughly in April is divided into 27 rainfall periods called after lunar asterisms, each roughly divided into four quarters, each called a *pada.*

Major crops

Paddy.—The normal area of paddy (*Oryza sativa*) cultivation in the district is 78,935 ha. In 1985-86 paddy was grown in an area of 64,497 ha, the district standing seventh in the State. The main paddy growing taluks are Krishnarajanagara, Tirumakudlu Narsipur, Nanjangud and Heggadadevankote. Jaya, Vani, Sona, IET 2254, 2820, Puspha, Madhu, Mangala, Pragati, Rasi and Mandya Vani are the important varieties cultivated in the district. Although paddy is grown under varied conditions, bulk of the area is under assured irrigation under canals, tanks and under lift irrigation. The efforts of the Department of Agriculture have been largely successful in popularising the local improved varieties and high-yielding varieties have made their debut in the mid-sixties and at present over 47,000 ha are under different high-yielding varieties. A grain yield of 75 quintals per hectare from Jaya, 60 quintals from IR-20 and 50 quintals from other varities can be expected under improved cultivation practices.

Jowar.—The normal area of jowar (*Sorgham vulgare*) cultivation in the district is 92,697 ha. In 1985-86, jowar was cultivated in an area of 77,620 ha, the district standing 9th in the State in this crop. The important jowar growing taluks are Nanjangud, Gundlupet, Chamarajanagar and Mysore. The important varieties cultivated in the district include CSH-1, CSH-6, CSV-5 and M 35-1. It is mostly grown as Kharif crop under rainfed conditions. Hybrid jowar has mostly replaced the local varieties and at present, the hybrid varieties are grown over an area of 33,000 ha annually in the district. About 50 quintals grain and 10-15 tonnes of fodder can be expected from hybrid jowar and 10 to 15 quintals grain from M-35-1 jowar variety per hectare.

Hybrid Maize.—The normal area under hybrid maize (*Zea mays*) is 9,244 ha. Periyapatna, Hunsur, Kollegal and Heggadadevanakote are the important maize cultivating taluks in the district and Periyapatna taluk is named as 'Hybrid Maize taluk' of the district. Hybrid maize was cultivated in an area of 17,678 ha during 1985-86. Deccan and Deccan 101 are the important maize varieties cultivated in the district. Hybrid maize is being successfully grown as a rain-fed crop in the district. An yield of 50 quintals grain from an irrigated crop and 30 quintals of grain per hectare from rainfed crop can be expected.

Ragi.—The normal area under *ragi* (*Eleusine coracana*) cultivation is 1,23,074 ha and the main *ragi* growing taluks are Heggadadevanakote, Hunsur, Kollegal, Periyapatna, Krishnarajanagar and Mysore. During 1985-86 Ragi was cultivated in an area of 1,04,135 ha, the district standing 5th in the State in this cereal. Shakti Indaf 1, Indaf 3, Indaf 5, Indaf 8, E.S. 11, Purna and PR 202 are the important ragi varieties cultivated in the district. Ragi is mostly a rain-fed crop obtained under irrigation. Of the important irrigated ragi varieties, purna, shakti, and Indaf-5 are the high yielders. High yielding varieties are grown over an area of 87,800 ha annually in the disrict.

Pulses.—The most important pulse crops grown in the district are redgram (8,117 ha), bengal gram (2,109 ha), cowpea, greengram, blackgram, field bean and horsegram. The area under C 152 cowpea is increasing and it is becoming popular as a pure crop and also as a second crop after the harvest of early *mungar* crops. The area under the crop was 18,654 ha during 1985-86. Hyd 3-C, Redgram, T 9 and Karagoan 3 blackgram, Pusa Baisaki and Ps1 greengram varieties are replacing the local varieties. In recent years, the area under horegram is decreasing. Special pulse development programmes are being implemented in the district both under Centrally and State sponsored schemes. Under these schemes programmes like demonstrations, procurement and distribution of certified and truthful labelled seeds, supply of plant protection chemicals and plant protection equipments under subsidised cost are being taken up.

Oil seeds.—The important oilseed crops grown in the district are groundnut, castor, safflower and sunflower. Amongst the different oil seeds, groundnut is the major oilseed crop. Special programmes have been taken both under State and Central Schemes for increasing the production of oil seeds. Groundnut can be grown both under rain-fed and irrigated conditions, the important varieties under cultivation are Spanish Improved and TMV-2. The major groundnut growing taluks are Gundlupet, Kollegal, Mysore, Nanjangud and T. Narasipur. It occupied 23,700 ha during 1986-87 in the district. Gundlupet and Nanjangud taluks are the chief sunflower cultivating taluks and it is grown in an area of about 20,000 ha during 1986-87. The area under cultivation of castor, sesamum and niger are 3,131, 8,345 and 3,394 ha respectively.

Cotton.—Cotton is an important fibre crop of the district grown over an area of 14,000 ha during 1986-87, the major cotton growing taluks being Heggadadevanakote, Hunsur and Gundlupet. Varalakshmi, Jayalakshmi, MY-14 and Sea Island (Andrews) Cotton are cultivated in the district, the area under cultivation being 9,200, 4,618, 903 and 721 ha respectively. Special schemes are being implemented for the development of cotton in the district. Varalakshmi and Jayalakshmi are the two hybrid cotton varieties cultivated under irrigated conditions and they yield about 30 to 40 quintals per hectare, compared to 10 to 15 quintals per hectare from other synthetic varieties.

Tobacco.—Tobacco is an important commercial crop of the district (introduced perhaps during the 17th century), occupying an area of about 10,146 ha during 1985-86. It is chiefly grown in Periyapatna, Hunsur, Krishnarajanagar, Gundlupet, Heggadadevanakote and Nanjangud taluks. FCV special, CTRV special, E1, E2 and K51 varieties having a duration of 150 to 170 days are the important varieties cultivated in the district. Kunkumathri bidi tobacco variety is cultivated in an area of 400 ha during 1985-86. Central Government formed the Tobacco Board during 1984. The Board has constructed a market yard at a cost of Rupees nine crores for the benefit of growers in Periyapatna and Hunsur. The Tobacco Board ensured that only financially sound parties participated in the auctions.

The Indian Central Tobacco Committee which was established in 1945 for the imporvement and development of different types of tobacco grown in the country has established the Central Tobacco Research Institute at Rajamundry in Andhra Pradesh. Subsequently the Committee started the regional research stations, one of them being at Hunsur for the improvement of the types of tobacco grown in the State. Besides, the number of tobacco development schemes run by the State Government were financed by the Committee. In 1965, with the abolition of the commodity committees, the Regional Research Station came under the control of Indian Council of Agricultural Research.

Sugarcane.—Sugarcane is one of the important commercial crops in the district. The crop is being grown in about 7,500 ha in 1986-87. Chamarajanagar and Kollegal are the major sugarcane growing taluks. CO-62175, B-37172 and CO-419 are the chief sugarcane varieties cultivated in the district. Two to three ratoon crops are being raised and with good management higher yields can be obtained than the main crop. In order to improve the productivity of cane, the Department of Agriculture is encouraging farmers to adopt various strategies like supply of good quality seed material, organising demonstrations, timely plant protection measures and conducting crop competitions etc.

High Yielding Varieties Programme

The High Yielding Varieties Programme was commenced in the district during 1966-67 to maximise agricultural production. During 1985-86, high yielding varieties occupied an area of 1,72,600 ha **i.e.** 32.7 per cent of net area sown as compared to 48,400 ha (10 per cent of net area sown) in 1973-74, and in this programme the district stands first in the State. The following table shows the taluk-wise area covered under high yielding varieties of crops during 1984-85. Area in hectares.

Taluk	*Paddy*	*Ragi*	*Jowar*	*Maize*	*Total**
C. R. Nagar	199	3,108	4,418	76	7,801
Gundlupet	50	2,850	8,760	131	11,956
H. D. Kote	3,009	11,140	5,000	544	19,695
Hunsur	5,245	15,000	1,004	1,747	22,996
Kollegal	1,046	14,645	420	2,587	19,757
K. R. Nagar	10,994	8,771	402	5	20,172
Mysore	1,893	10,028	7,249	2	19,172
Nanjangud	10,760	5,510	4,750	71	21,095
Periyapatna	2,790	11,053	750	6,456	21,049
T. Narasipur	11,048	4,517	80	—	16,365
Yelandur	161	950	190	10	1,418
Total	47,195	87,572	33,743	11,629	1,81,476

*Total includes Bajra and Wheat area also.

Area in hectares, production in tonnes and yield in kg/per hectares of principal food and non-food crops in Mysore District.

		1955-56	1960-61	1975-76	1984-85
Paddy	A	49,222	55,487	87,507	70,325
	P	88,210	1,15,272	2,83,412	2,86,402
	Y	1,896	2,187	3,239	4,287
Ragi	A	94,324	1,23,238	1,12,528	1,27,608
	P	84,466	57,345	1,17,769	1,45,813
	Y	943	490	1,047	1,203
Jowar	A	80,921	84,584	1,00,306	76,255
	P	42,265	49,389	1,03,592	92,066
	Y	550	618	1,033	1,271
Bajra	A	3,058	2,053	3,339	1,558
	P	2,010	472	6,033	672
	Y	692	242	1,807	454
Minor	A	968	2,462	7,264	721
millets	P	232	525	2,321	171
	Y	239	213	320	250

		1955-56	1960-61	1975-76	1984-85
Total	A	2,25,435	2,67,916	3,27,645	2,88,791
cereals	P	2,15,173	2,23,061	4,55,042	4,68,172
	Y	955	833	1,389	1,706
Bengalgram	A	3,802	3,832	2,740	2,248
	P	1,095	975	1,153	970
	Y	288	268	—	454
Redgram	A	6,838	12,079	9,685	7,563
	P	1,449	3,510	4,131	3,707
	Y	212	306	—	516
Other	A	99,066	1,05,352	93,123	99,261
Pulses	P	24,435	29,507	31,260	28,885
	Y	247	280	—	—
Total	A	1,09,706	1,21,263	1,05,548	1,09,072
Pulses	P	26,979	33,991	36,544	33,562
	Y	245	280	—	324
Sesamum	A	10 ,832	11,007	7,199	10,989
	P	2,125	2,297	2,442	3,852
	Y	196	220	—	369
Groundnut	A	14,873	25,232	48,387	40,656
	P	3,901	16,954	46,662	45,178
	Y	262	707	—	1,170
Castor	A	5,477	6,761	7,130	5,810
	P	1,197	1,448	4,342	4,233
	Y	219	214	—	767
Total	A	33,224	43,449	66,946	80,330
oilseeds	P	7,722	20,897	56,128	63,862
	Y	232	481	—	837
Cotton	A	5,157	3,642	8,966	14,813
	*P	3,526	1,321	11,582	22,930
	Y	123	65	220	277
Tobacco	A	9,521	6,423	6,093	12,398
	P	3,008	1,976	4,144	6,419
	Y	316	307	680	545
Sugarcane	A	—	2,114	6,958	6,450
	**P	—	1,82,003	5,55,248	6,15,519
	Y	—	91	79,800	101

* Production of bales of 170 Kgc Lint)

** Production in terms of canes.

Source : Directorate of Economics and Statistics, Bangalore.

Dry farming

Mysore district has nearly twenty per cent of the cultivated area under irrigation and the rest of the area is depending on rainfall. The rainfall is not only low but also not well distributed. Besides in these areas, water is lost due to the occurrence of run off. Drought conditions thus created lead to the reduction in the yield of crops and crop failures in certain years. Successful crop production in Dry Farming areas envisages soil and water conservation and change in the choice of crops, varieties and management practices based on yearly changes in the rainfall pattern.

Soil conservation measure are quite necessary to conserve the top fertile soil and moisture of the land. Soil conservation works are being taken up in accordance with the provisions made under Karnataka Land Improvement Act 1961. It is estimated that 4.70 lakh hectares could be brought under contour bunding. The taluk-wise details are given in the following table.

Taluk	*Total area that could be brought under contour bunding*	*Total area contour bunded at the end of March*		
		1978	1981	1985
C.R. Nagar	58,680	17,402	20,673	27,601
Gundlupet	55,644	15,378	22,213	32,423
H. D. Kote	45,527	60	241	902
Hunsur	41,480	7,610	8,041	8,041
Kollegal	62,524	18,865	23,865	27,016
K. R. Nagar	20,538	2,800	2,800	2,802
Mysore	52,103	7,339	18,631	27,391
Nanjangud	54,228	14,557	17,887	23,105
Periyapatna	35,410	4,370	5,610	5,610
T. Narsipur	35,410	10,151	12,321	15,136
Yelandur	8,700	1,620	2,648	3,226
District	4,70,244	1,10,152	1,34,930	1,73,253

Dry land/Rain-fed farming in 100 hectares block around raingauge stations is in operation in the district from 1985-86. It contemplates study and recommendations of location, specific technology based on rainfall, probability analysis and having contingent plans to meet out aberrant weather conditions. The station selected, the village proposed (in brackets) and the area covered in hectares are given hereunder: Mysore Palace (Hosahalli) 100, Nanjangud (Yelachagere) 120, Begur and Bandipura (Raghavendrapura,

Devarahalli Hanuma) 314, Chamarajanagar (Bettadapura and Devanahalli) 200, T.Narasipur (Harohalli) 100, Krishnarajanagar (Madaganahalli) 190, Hunsur (Ramanahalli) 104, Heggadadevanakote (Kantegamanahally and Hanahalli) 204 ha and Periyapatna (Terenalle) 100, Total 1,474 ha in 1985-86. In this project, depending on the rainfall probability charts, various agricultural operations are programmed well in advance so as to get maximum yields. Dry farming projects are organised in taluks having rainfall of less than 700 mm and the rain-fed farming in the taluks having rainfall of more than 700 mm per annum.

Dry land/Rain-fed farming practices are taken up in an area of 1000 ha per taluk from 1983-84 the progress achieved is given under :

Taluk	*Soil samples tested*	*Contour bunding (ha)*	*Seeds (qui)*	*Fertilizers (tonnes)*
C. R. Nagar	334	130	32	282
Gundlupet	442	630	46	110
H. D.Kote	44	109	22	65
Hunsur	310	108	18	71
Kollegal	320	220	21	90
K. R. Nagar	280	214	20	79
Mysore	382	450	30	200
Nanjangud	290	210	27	75
Periyapatna	200	115	14	55
T. Narasipur	300	390	20	141
Yelandur	287	410	19	80

Farm Management Studies

The main objectives of the Farm Management Studies are (a) to work out the cost of cultivation per hectare and cost of production per quintal of the important crops of the district and (b) to study the physical input, output and cost return relationships of different crop enterprises. Farm management studies were extended to Mysore district from 1976-77. During the year 1985-86, the randomly selected villages are Hadinaru and Immavu in Nanjangud tq, Bevinahalli and Ganigana Koppalu in T.Narasipur taluk and Arkalvadi and Yanagalli in Chamarajnagar taluk coming under southern dry zone and Annur and Rajegowdanahundi in Heggadadevanakote taluk coming under southern transition zone. The data have been collected from sample farmers for all the principal crops grown for all the three seasons.

Dry Land Development

Dry Land Development Programme concentrates on the development of clearly demarcated water sheds. The main objective of Dry Land Development Board is to minimise risk in rain-fed farming and the major thrust will be on land use according to its capability; the stabilization and improvement of the basic drainage systems so as to ensure the safe disposal and storage of surplus run off; on field works comprising where appropriate, graded bunding, land smoothening and implementation of graded cultivation (bed and furrow) systems in order to make the best use of rainfall for plant growth while simultaneously providing erosion control or drainage and the use of appropriate agricultural implements. Soil erosion and moisture conservation are the main problems in Dry Land Development. All these years, attention was mainly concentrated on contour bunding. During VII Plan the emphasis will be on dry land development on watershed basis.

Arasanakere tank water shed is being developed by Dry Land Development Board. It is divided into seven sub-wartersheds *viz.*, Halladamadahalli, Paramapura, Hakkalapura, Thandavadi, Halepura, Hemmaragala and Arasanakere. It has an area of 35,935 ha in Gundlupet, Nanjangud and Chamarajnagar taluks covering 101 villages. The achievements of Halladamadahalli sub-watershed for the year 1984-85 and 1985-86 are as follows: strengthening of existing bund 2,946 ha, gully plug—2,197 nos., farm pond—13, water ways—1,51,893 metres, diversion channel—92,257 metres, land smoothening—548 ha, nala bunding one, raising of polythene bagged seedlings—five lakhs, gully checks—45 and road side plantations—2.5 km.

Bommenahalli Huyilalu Watershed is one of the 42 model watersheds identified in the country under National Watershed Development Programme from 1983-84. The watershed is being financed by different agencies and is developed in association with the Indian Council of Agricultural Research Bommenahalli Watershed has an area of 823 ha in Mysore taluk covering three villages and 582 agricultural families. The progress achieved during 1985-86 was as follows: soil conservation works on agricultural lands—183 ha, gully plugs—26, Crop production programme—225 ha and expenditure 3.34 lakhs of rupees.

Extension Programme

The Agriculture Extension Project is a unique and unified system of providing a total extension support to the programmes including inpu supply, quality control, monitoring etc. The World Bank aided Agriculture Extension Programme which has completed the extended period of one year by 31st March 1985 in the district, is being extended for another period of five years under National Agricultural Extension Project. As in the Agricultural Extension Project, the technology transference takes place through training and visit system under the new programme. The training at two levels, one at the district level and the other at the taluk level is held

regularly at monthly workshops and fortnightly training sessions. In the new programme, special attention is being paid to identify the farmers who have lagged behind so that they could be motivated to take up the new technology. The monthly training of higher level functionaries in the district is arranged with the help of master trainers from the University of Agricultural Sciences. There are fifty ranges in the district headed by Assistant Agricultural Officers and each range is supplied with agricultural inputs for marketing to the farmers of that range. It is proposed to store 1,886 quintals of certified seeds at 50 places in the district during 1987-88.

Trials and Demonstrations

The Farm Trial is a process of testing the suitability and profitability of a new technology under local conditions. The farm trials are identified by the District Level Technical Committee and the Principal Agricultural Officer will arrange to layout the trials on farmers fields. During 1985-86, 24 farm trails are laid out at different locations in the district.

Mini Kit Demonstrations help to fix up suitable varieties for the district and these demonstrations will help the farmers as well as extension workers to get acquainted with the varieties before their release. During 1985-86 about 5,000 mini kit demonstrations were allotted to the district.

The programme of community nurseries of paddy (central sector) and *ragi* (district sector) helps to raise good nurseries using suitable varieties in the holdings of the farmers. The seedlings will be shared with farmers in the neighbouring areas who lack good facilities for raising nurseries. Government of India have provided a subsidy of Rs. 1,500 per hectare for community nurseries on paddy.

The Comprehensive Crop Insurance scheme is being implemented in the district from 1985-86 and paddy, jowar, *ragi* and groundnut are covered under this scheme. The scheme is being operated through the General Insurance Corporation of India with the active involvement of State Government.

Karnataka Pradesh Krishik Samaj.—A district branch of the Krishika Samaj is functioning in the district. The main objectives of the Samaj are to study the problems of the farmers, to educate and train the farmers with the co-operation of Government departments and other agencies and to bring about improvements in the living standards of the farmers.

IRRIGATION

Importance given to irrigation, the nature of irrigation facilities and arrangements made for their upkeep and maintenance during historical times has been discussed at the beginning of this chapter.

Before the advent of the British, there had been many small or large canals taking off the Cauvery and its tributaries with or without control works. Obviously there were no regulation rules and no authorised capacities for most of these channels. The old *anecut* channels are as follows :

Name of the anecut channel	*Source of supply*	*Ayacut area in ha.*
1. Mirle *anecut*	Cauvery	1,663
2. Ramasamudram or Chunchanakatte *anecut.*	,,	2,762
3. Chamaraja *anecut*	,,	9,516
4. Madhavamantri *anecut*	,,	1,874
5. Hanagodu *cnecut*	Lakshmanatirtha	4,536
6. Hanumanthapura channel	,,	1,203
7. Kattemalalavadi *anecut*	,,	317
8. Siriyur *anecut*	,,	831
9. Hongalawadi *anecut*	Suvarnavati	345
10. Sargur channel	,,	79
11. Hemma Channel	,,	264
12. Alur Channel	,,	174
13. Muralahalli Channel	,,	80
14. Hosahalli Channel	,,	167
15. Bandikere Channel	,,	92
16. Hullahalli *anecut*	Kabini	3,298
17. Rampura *anecut*	,,	3,257

Some portions of *Ayacut* areas of Machanahalli, Avandur, Ayyarahaili and Siriyur *anecut* channels are submerged under Krishnarajasagara reservoir. Lakshmanapura *anecut* is submerged under Nugu reservoir.

English chronicler Rev. Martins speaks of Chikkadevaraya Wodeyar cutting a long canal in Mysore district by erecting a mighty earthen dam across the Cauvery in 1701 and checking the flow of the Cauvery waters to the lower valley. But the dam was washed off in the rainy season. Dr. Buchanan (1800) mentions that reservoirs were rare and the canals from the rivers were completely filled in the rainy season only. He states " If attention were paid to construct reservoirs for the preservation of water that is lost from the canals in the rainy season, much of the ground would annually give two crops of rice ". Near Periyapatna the wet lands were entirely irrigated from reservoirs ; but in southern parts, canals from the Lakshmanathirtha provided much water to the farmers.

He opined that smaller reservoirs sufficient to contain 6-8 weeks water were necessary. In the Kollegal area, there were forty to fifty reservoirs constructed during the period of Dalawai of Mysore, Dodda Deva Raya Wodeyar, according to him.

During the regency of Dewan Purnaiah, a generous sum was spent on irrigation works. This expenditure was to a great extent incurred on the repairs of old tanks and canals and he raised a dam across the Lakshmana-tirtha (Sagara Katte). During the period when the British Commission was in power, most of the tanks were improved and many reconstructed from the disused condition into which they had fallen. After the formation of the Public Works Department in 1856, the expenditure on irrigation went up. Special attention was paid to irrigation between the years 1872 and 1878 when a separate irrigation branch of the Public Works Department was constituted. Since the Rendition in 1881, grants for irrigation were increased and a liberal policy pursued. In 1913, the Government raised the annual grant for promotion of irrigation works and the grant was distributed under various heads like major tanks, minor tanks, canals and investigation.

Under Plans

Prior to Independence, Krishnarajasagar was the only major irrigation project undertaken. The Nugu Reservoir Project was taken up during the First, the Kabini Reservoir Project during the Second and the Suvarnavati Reservoir Project during the Third Five-Year Plan periods. The Gundal Project was started during the Annual Plans of 1966-69. The Nugu Reservior Project, among major irrigation projects, and the Gundal, Suvarnavati, Chickhole and the Hebballa projects among medium irrigation projects are completed. The projects under execution are Kabini and K.R.S. Right Bank Canal (Varuna canal) among major projects and Taraka, Udu'horehalla, Nallur Amanikere, Chickahole and Sagara Dodda-kere among medium projects.

The Kabini Project

The Kabini Reservoir Project is a multi-purpose project. It consists of a storage reservoir across the Kabini river near Beechanally-Bidarahally in Heggadadevanakote taluk. Two canals, one each on either bank, take off from the main dam. The project contemplates irrigation benefits over an area of 42,492 ha, lying entirely in Mysore district. The dam, 28.95 metres in height and 2,733 metres long has a central masonry section with flanks of earthen section. The storage capacity of the reservoir is 552.7 M Cum. The project also contemplates development of 32 MW of Hydro-power. One penstock of 5.5 metres diameter is embedded in the non-overflow section on right side and necessary intake structure is also constructed. Due to the formation of this reservoir, 22 villages with 14 hamlets and 6,403 hectares of land have come under submersion. In addition, about 15 km length of Mysore-Mananthody road has also come

under submersion. The Kabini left bank canal taking off from the left bank, runs for a length of 26 km and commands an area of 1,214 ha under it. It tails off into Taraka Valley. The Kabini Right bank canal runs for a length of 202 km with an irrigable command area of 41,278 ha. This canal crosses Bandigaduhalla and Nugu river through Sagara and Nugu Aqueducts in its initial reaches. Further it crosses two waste weir valleys of Narasambudi tank through Aqueducts and Mysore-Chamarajanagar railway line. *Enroute* it passes through deep cuts of about 29 metres height. Thus this project extends irrigation over 42,492 ha with an utilization of about 538 M Cum of water. The project estimated to cost of Rs. 2,480 lakhs was administratively approved in 1970. The cost of the revised project, at 1982-83 level of rates was Rs. 9,500 lakhs.

The work on main dam, though started in 1959 gained momentum only from 1967 onwards and is completed. The full storage potential was created by 1974 itself and the storage is being effected from 1975. Entire work of rehabilitation in 25 new centres, land acquisition and formation of deviation of Mysore Manantody road has been completed in all respects. The entire length of the Kabini left bank canal is completed and full potential of 1,214 ha was created by June 1974. The Kabini Right bank canal upto its first 90 km has been practically completed including completion of major cross drainage works in the reach like aqueducts across Sagare valley, Nugu and Narasambudi Wasteweir Valley and water has been allowed in this reach to irrigate an area of 5,826 ha starting from the year 1981. The total expenditure incurred on this project to end of March 1986 was about 10,353 lakhs and the cumulative potential created to the end of June 1985 was about 30,043 hectares. The taluk-wise total potential and potential already created in hectares under Kabini Project in the district at the end of June 1985 is as follows : Heggadadevanakote 2,994/2,994, Nanjangud 6,880/6,880, T. Narsipur 13,182/13,152, Chamarajanagar 1,376/1,376, Yelandur 6,475/5,370 and Kollegal 11,615/269. Lift irrigation scheme under Kabini reservoir project and area irrigated in hectares are as follows : Rampura—105, Godanapur—202, Belala—77 and Basavanapura—160 in Nanjangud tq. Nilasoge—127, Chendahally—1,619 Chennabasavanahundi—121, Mavinhalli—121 and Malangi—251 in Tirumakudlu Narasipur taluk, Harale—126 and Sargur—182 in H.D. Kote taluk and Sattegala—405 in Kollegal taluk.

Krishnarajasagara Right Bank Canal (Varuna Canal)

The famous Krishnarajasagara dam across the river Cauvery near Kannambadi village in Pandavapura taluk in Mandya district has been completed in the year 1933. The dam is located 15 km from the City of Mysore. The Krishnarajasagara reservoir has a maximum depth of storage of 37.79 metres. The total length of the dam is 2,621 metres and the height of the dam above the foundation is 42.67 metres. The storage capacity of the reservoir is 1363 MCum. The canal on the left bank is

named after Sir M. Visvesaraya. It provides irrigation facilities over 79,800 ha (mostly in Mandya dt), and the canal on the right bank extends irrigation over an area of 1,513 ha only. The proposed Krishnarajasagara Right bank canal (Varuna canal) takes off on the existing sluices on right bank and runs for a length of 135 km with an irrigable command of 32,375 ha. *Enroute* it passes through two major aqueducts. Taluk-wise area in hectares to be benefited after completion of the project in the district is as follows: Mysore 18,235, Tirumakudlu Narasipura 3,085, Nanjangud 6,191 and Heggadadevanakote 1,808 hectares. The estimated cost of the project at 1976-77 level of rates was Rs. 1,850 lakhs and administrative approval has been accorded in April 1979, and work was started immediately. The work in the first 30 km length of main canal has been tackled. Expenditure to end of March 1986 was Rs. 1,095 lakhs. In the first phase, the utilisation under this project is limited to 113 MCum for irrigating 24,304 ha of Kharif semi-dry crops. In the final phase, entire 32,375 ha will come under irrigation in Kharif season only. The revised estimated cost of this project at 1985-86 level of rates was 5,810 lakhs and about 395 ha of land have been brought under irrigation.

Harangi Project

The Harangi Reservoir Project consists of formation of a storage reservoir across the river Harangi (a major tributary to the river Cauvery) near Hardur village in Somwarpet taluk of Kodagu district and the project is intended to extend irrigation benefits to over 54,591 ha in Kodagu, Hassan and Mysore districts. The storage reservoir is formed by the construction of 846 metres long masonry-cum-earthen dam. The height of the dam above river bed level is 50 metres and 53 metres above the deepest foundation level, with a gross storage capacity of 240.72 MCum and live storage capacity of 228.63 MCum. The Harangi left bank canal runs for a length of 153 km commanding an area of 11,927 ha. It negotiates Kakkehole and Madlapur valleys in its initial reaches through aqueducts. The Harangi right bank canal takes off from the 12th km of the Harangi left bank canal, and crosses the river Cauvery through an aqueduct near Kanive village. It runs for a length of 278 km including its branches namely Krishnarajanagar branch canal of the length of 60 km, Marur branch canal of the length of 42 km and a reverse canal also called as Koppa branch canal of the length of 16 km. A lift canal from Periyapatna lift irrigation scheme is also contemplated under this project. The Harangi right bank canal is led into Karadilakkanakere at its 4th km. From this tank, it is proposed to lift water against a head of 51 metres to take into a lift canal which runs for a length of 50 km, commanding an area of 12,140 ha. Under the Somwarpet lift irrigation scheme, it is proposed to lift water at the 12th km of Harangi left bank canal to height of 44 metres to take into a lift canal which runs for a length of 10 km commanding an area of 607 ha in Somwarpet taluk. The taluk-wise irrigable area

contemplated under this project in the district is as follows : Krishnarajanagara 12,309 ha, Periyapatna 12,185 ha and Hunsur 18,935 ha, the total being 43,429 ha.

The work of the project was started in the year 1969. The work of the main dam is completed in all respects and full storage capacity was created during 1982. The work of Harangi left bank canal in its entire length of 153 km is tackled and is in progress. The Harangi right bank canal upto 75 km is tackled. Work on the Krishnarajanagara and Koppa branch canals and Kanive Aqueduct are in progress. Administrative approval to the project costing Rs. 1,100 lakhs has been accorded in November 1969. The revised cost of the project was 12,200 lakhs at 1985-86 level of rates including lift irrigation schemes. The cumulative expenditure on the project to the end of March 1986 was 7,808 lakhs. Out of the created irrigation potential of 23,849 ha to the end of March 1986, 6,383 ha lies in Krishnarajanagar taluk, 4,848 ha in Periyapatna taluk and 2,547 ha in Hunsur taluk of Mysore district, total being 13,778 ha.

Hemavati Project

The Hemavati Reservoir Project consists of a storage reservoir constructed across the river Hemavati near Gorur village in Hassan ditrict with a canal system on each bank to provide irrigation facilities over an area of 2.63 lakh hectares in Hassan, Mandya, Tumkur and Mysore districts. The Hemavati right bank high level canal taking off from the foreshore of the reservoir cuts through the ridge between the Hemavati and the Cauvery valley through a three km long tunnel and runs for a length of 106 km. This canal directly commands an area of 22,672 ha, of which 2,266 ha lie in Krishnarajanagar taluk of Mysore district. The work of the main dam started in 1968 is practically completed and storage has been effected from 1982. The work on the Right bank high level canal is in progress.

Nugu Project

The Nugu Reservoir Project consists of two canals taken off from a reservoir constructed across the Nugu river, a tributary to the Kabini near Birwal village in Heggadadevanakote taluk. The masonry dam with earthen flanks is 44 metres high and 637 metres long. The reservoir has the storage capacity of 154 MCum. About 10,500 ha are irrigated from the project, mostly in Nanjangud taluk. The construction of this project was started in 1946 and completed during 1959. The expenditure incurred for its construction was 320 lakhs of rupees. The taluk-wise irrigated area in the district is as follows : Nanjungud taluk—9,815 ha and Heggadadevanakote taluk—600 ha.

Taraka Project

The Taraka Project consists of construction of storage reservoir across the river Taraka, a tributary to the Kabini near Penjahally village in

Heggadadevankote taluk. One canal on either bank of the dam and a link canal from the right bank canal provides irrigation over an area of 8,900 ha, lying entirely in Heggadadevankote taluk. The dam of 1,273 metres in length and 32 metres in height has a mansonry section with earthen dam on either banks. The storage capacity of the reservoir is 112 MCum. Only 1,093 ha of forest land without affecting any villages come under submersion of the reservoir. The right bank canal runs for a length of 37 km and commands an area of 2,690 ha. A link canal takes off at 10th km of right bank canal and commands an area of 1,923 ha in foreshore of Kabini waterspread. Thus the total commands under right bank canal is 4,613 ha. The Taraka left bank canal with a command of 4,290 ha runs for a length of 105 km. Total utilization proposed under the project is 193 MCum. Administrative approval was accorded in April 1970 for the project costing Rs. 170 lakhs. The revised cost of the project was estimated at Rs. 1,220 lakhs at 1985-86 level of rates. The work of this project was taken up in 1973-74 and partial storage has been created during 1979. Expenditure to end of March 1986 was Rs. 1,090 lakhs. An irrigation potential of 6,048 ha has been created to the end of March 1986.

Uduthorehalla Project

The Uduthorehalla project envisages construction of a storage reservoir across Uduthorehalla stream (a tributary to the Tattehalla which in turn confluences with the river Cauvery) near Ajjipura village in Kollegal taluk. An earthen dam of about 1,560 metres in length and 41.30 metres in height with masonry spillway on right flank mound is proposed to be constructed for forming the storage reservoir with gross storage capacity of 26.19 MCum and live storage capacity of 22.01 MCum. Two canals are proposed on either side to irrigate 6,275 ha and existing net atchkat of 325 ha under Gundapur *anecut* situated two km downstream of the reservoir is also assured. While the left bank canal with an irrigable command of 2,510 ha run for 12 km, the right bank canal runs for 47 km to command an area of 3,765 ha. The catchment area of the dam site is 202 sq km with 75 per cent dependable yield of 25.85 MCum at the dam site. The proposed utilization is about 34.84 MCum and an estimated cost of the project at 1977 level of rates was Rs. 755 lakhs and was administratively approved in November 1978. The entire atchkat lies in the Ramapura hobli of Kollegal taluk having a rainfall of less than 45 cm. Only about 162 ha of forest land came under reservoir submersion and about 5 km cart track between Ajjipur and Suttinavelli is affected. The work on the project was started in 1978 and the expenditure to the end of March 1986 was Rs. 76.64 lakhs.

Nallur Amanikere Project

The Nallur Amanikere project contemplates construction of an earthen dam of 1,920 metres length and 14.54 metres height, with side channel

spillway across Gundlu stream near Ingalvadi Village in Gundlupet taluk. Two canals, one on either bank, provide irrigation over an area of 1,300 ha entirely lying in Gundlupet taluk. After the completion of the second stage, it is proposed to provide irrigation over an area of 2,428 ha. Only about 193 ha of land comes under submersion on completion of storage reservoir having a storage capacity of 6.56 MCum of water. The left bank canal runs for a length of 14 km and commands an area of 1,051 ha. The right bank canals runs only for about 5 km having an irrigable command of 249 ha, utilization of 6.23 MCum is contemplated under this project. Administrative approval to the project, costing Rs. 190 lakhs has been accorded in January 1973. The cost of the revised project is 530 lakhs at 1984-85 level of rates. Expenditure till the end of March 1986 on the project was Rs. 511.45 lakhs. Work on this project was commenced during 1975 and full irrigation potential to an extent of 1,051 ha under left bank canal and 249 ha under right bank canal has been created by June 1986. The project was completed during 1987.

Sagare Doddakere Project

The Sagare Doddakere Project contemplates construction of a storage reservoir across the Bandigaduhalla, a tributary to the river Kabini, near Hegnur Village in Heggadadevankote taluk. Two irrigation canals on either bank are intended to provide irrigation over an area of 1,417 ha of land. An area of 150 ha of land come under reservoir submergence when the reservoir is completed. No villages are effected. The left bank with a command area of 45 ha runs for a length of nine km. The Right bank canal runs for a length of 26 km with a command of 1,012 ha. While the total irrigable command of the project is 1,417 ha utilization proposed under this project is 11.56 MCum. The work on this project is in initial stage. Administrative approval to the project costing Rs. 44 lakhs has been accorded in June 1971. The cost of the project at 1977 level of rates was Rs. 173 lakhs.

Suvarnavati Project

The Suvarnavati project envisages the construction of a masonry dam with earthen banks of maximum height of 28 metres and of the length of 1,240 metres across the Suvarnavati, a tributary to the Cauvery near Attigulipura in Chamarajnagar taluk. Two canals, one on either bank, take off from the reservoir to irrigate an area of 2,580 ha in Chamarajnagar taluk including stabilisation of 4,362 ha under existing *anecuts*. The estimated cost of the project was 410 lakhs. The reservoir has the storage capacity of 35.4 MCum and the proposed utilization is 95.19 MCum. The work under this project was started in 1967. An area of 508 has been submerged due to the construction of the reservoir. Expenditure to the end of March 1986 was 368.99 lakhs. This project was completed in 1984.

Chickahole Project

The Chickahole dam, 745 metres long and 24 metres high is constructed across the river Chickahole, a tributary to the Suvarnavati river near Ankanasettypura village in Chamarajnagar taluk to irrigate an area of 1,630 hectares including 240 ha stabilisation in Chamarajanagar taluk. The estimated cost of the project was Rs. 93 lakhs. The work on this project was started in 1958 and completed in 1969. The dam was damaged by the floods of 1972 and it was rebuilt from 1976 to 1984 at an estimated cost of Rs. 325.58 lakhs. About 160 ha of area has come under submergence due to the formation of the reservoir. The storage capacity of the reservoir is 10.65 MCum and utilization proposed is 21.94 MCum.

Hebballa Project

The Hebballa reservior project envisaged the construction of an earthen dam of the length of 863 metres and 19 metres high over river bed, across the Hebballa, a tributary to the Taraka river in Heggadadevanakote taluk. This project was started in the year 1958 and completed in 1963. The average annual rainfall in the catchment area is about 875 mm. The reservoir has the gross storage capacity of 11.97 MCum and live storage capacity of 11.07 MCum. The total expenditure incurred on the project works out to Rs. 58.6 lakhs. A canal of 32 km length takes off from the reservoir to irrigate an area of 1,235 ha. in Heggadadevanakote taluk.

Gundal Project

The Gundal Reservoir Project envisaged construction of earthen dam across the Gundal stream, a major stream flowing in Kollegal taluk and a tributary to the Cauvery, with a saddle spillway on the right side along the Jallgeguda hill range. The total length of the dam is 1,220 metres and the height of the dam above river bed level is 30 metres with a gross storage capacity of 23 MCum. The catchment area of the dam site is 93 sq km with an estimated average yield of 50.9 MCum at the dam site. This project was started in 1970 and completed in 1980. About 280 hectares of cultivated dry lands got submerged and 300 people were affected under this project. Two canals on either side of the dam of the length of 16 km each, run to provide irrigation facilities for a total atchkat of 6,112 ha including stabilising the existing atchkat of 2,064 ha under old *anecuts* and channels. The gross utilization is about 50.9 MCum and the expenditure incurred on the project since inception upto the end of March 1986 was about 469 lakhs at 1979-80 level of rates. The inflow pattern into the reservoir is unusually poor. However the Kabini Right bank canal when completed runs in the command area of Gundal project providing irrigation benefits over 3,248 ha, and leaving the balance of 2,863 for the direct command under Gundal Reservoir Project.

Link Canal between Chickahole and Suvarnavati Projects

The project report of link canal between the Chickahole and the Suvarnavati is administratively approved on 28th June 1984 for Rs. 59.5 lakhs. The total cumulative expenditure incurred upto the end of March 1987 was Rs. 91 lakhs. The inflow data indicates that there is surplus flow in the Chickahole river and deficit flow in the Suvarnavati river as observed from the year 1965. So proposals are made to divert excess flow to the Suvarnavati reservoir during the floods in the Chickahole river through the link canal cutting the ridge between the two major valleys. Also the FRL of the Suvarnavati reservoir is 5.79 metres below the FRL of Chickahole reservoir which has permitted the gravity flow of link canal from Chickahole to the Suvarnavati Reservoir. The FRL of the Chickahole dam is 754 metres and that of the Suvarnavati reservoir is 748 metres. The length of the link canal is 2.88 km and it takes off from the offshore of the Chickahole reservoir and joins the Suvarnavati reservoir. The earthwork excavation in all the three km have been tackled and about 90 per cent of work has been completed in 1985. The utilizable surplus water available under this project is assessed as 21.24 MCum.

The following table gives the taluk-wise net area sown and the area irrigated by canals, tanks, wells and other sources during 1984-85.

Taluk	*Net area sown*	*Net area irrigated during* 1984–85				
		canals	*tanks*	*wells*	*others*	*Total*
C. R. Nagar	46,101	49	211	2,870	—	3,130
Gundlupet	61,880	—	873	4,537	22	5,432
H. D. Kote	60,067	6,485	1,573	750	161	8,969
Hunsur	59,188	6,035	3,006	1,828	—	10,869
Kollegal	50,856	252	218	9,639	359	10,468
K. R. Nagar	35,690	15,681	586	430	200	16,897
Mysore	47,728	2,820	260	654	90	3,824
Nanjangud	75,347	17,677	23	2,216	—	19,916
Periyapatna	43,126	1,813	1,349	76	197	3,435
T. Narsipur	40,447	14,196	2,785	1,310	430	18,721
Yelandur	26,473	—	1,108	1,466	—	2,574
District	5,28,488	65,008	11,992	25,776	1,459	1,04,235

This works out to a total irrigation facility of 19.72 per cent in the district in 1984-85.

The taluk-wise total irrigation potential in the district is as follows

Taluk	*Irrigation Potential*		*Total Area (hectares)*
	Surface Water	*Ground Water*	
C. R. Nagar ..	31,557	5,652	37,209
Gundlupet ..	5,764	1,856	7,620
H. D. Kote ..	16,001	1,859	17,860
Hunsur ..	10,457	2,201	12,658
Kollegal ..	25,136	8,598	33,734
K. R. Nagar ..	11,297	1,888	13,185
Mysore ..	24,475	3,907	28,382
Nanjangud ..	60,401	3,392	63,793
Periyapatna ..	4,414	1,891	6,305
T. Narasipur ..	38,118	1,970	40,088
Yelandur ..	12,397	829	13,226
District ..	2,40,017	34,043	2,74,060

Minor Irrigation

Minor irrigation works are of great importance to minimise the adverse effects of bad seasons. Irrigation works costing less than 25 lakhs are considered as minor irrigation works. As per Planning Commission, all irrigation works having an atchkat of 2,000 hectares and less are included under minor irrigation which include tank, streams, pickups channels and lift irrigation schemes. More stress is laid on these works as they require less time for construction. The percentage of irrigation in respect of minor irrigation for the district was 12.93 compared to 8.71 per cent for the State in 1979. There were 937 tanks, benefiting 37,374 ha, 224 pickups benefiting 17,658 ha and 31 lift irrigation schemes contributing irrigation facilities for over 6,400 hectares. About 137 minor irrigation works were completed from 1957-58 to 1978-79. The taluk-wise minor irrigation details are given in the following table for the year 1985-86. (For taluk-wise figures of tanks, see under the section Fisheries in this chapter).

Minor Irrigation Statistics at a Glance, Mysore District as on 1-4-1986

Taluk	Tanks		Anecuts		Pickups		L.I. Schemes		Other M.I. Works		All Sources	
	No.	Atchkat	No.	Atchkat	No.	Atchkat	No.	Atchkat	No.	Atchkat	No.	Atchkat
C. R. Nagar ..	53	6,899	—	—	8	197	2	186	14	1,092	77	8,374
Gundlupet	53	4,291	1	176	15	229	1	81	3	73	73	4,850
H. D. Kote	59	3,218	1	460	4	728	4	182	—	—	68	4,588
Hunsur	131	3,906	3	6,765	1	19	4	598	1	10	140	11,298
Kollegal	23	4,204	2	232	16	1,498	4	599	1	8	46	6,541
K. R. Nagar	60	1,003	3	6,001	4	107	—	—	—	—	67	7,111
Mysore	97	2,204	—	—	49	1,633	3	1,212	5	1,422	154	6,471
Nanjangud	37	1,053	1	273	4	89	—	—	3	5,370	45	6,785
Periyapatna	238	3,531	—	—	15	354	2	89	2	23	261	3,997
T. Narasipur	35	2,581	—	—	16	1,611	1	1,133	10	11,619	62	16,944
Yelandur	23	2,415	—	—	—	—	—	—	—	—	23	2,415
Total	809	35,305	11	13,907	136	6,465	21	4,080	39	19,617	1016	79,374

HORTICULTURE

The Department of Horticulture deals with various aspects of horticulture connected with the extension, research and technology regarding the cultivation of fruits, vegetables, plantation crops spices and flowers. It is charged with the responsibility of development and maintenance of public parks and gardens. Organised introduction, acclimatization and multiplication of all the horticultural crops, the development of organised nurseries and nursery trade, starting and organising horticultural societies etc. also come within the purview of the Department.

The district has been grouped into two horticultural sub-divisions for administrative convenience. They are: (1) Nanjangud sub-division comprising Nanjangud, Gundlupet, Chamarajnagar, Yelandur, Kollegal and Tirumakudlu Narasipur taluks and (2) Hunsur sub-division comprising Hunsur, Krishnarajanagara, Periyapatna and Heggadadevanakote taluks. Mysore taluk is under the supervision of District Horticultural Officer while the sub divisions are headed by one Assistant Director of Horticulture each. One Assistant Director of Horticulture (parks and gardens) is exclusively looking after the parks and gardens of Mysore City.

Parks and Gardens

The Department maintains many parks and gardens. Considerable portion of Mysore city is occupied by parks and gardens intercepted by beautiful avenues. Of late more gardens are coming up at Mysore. The list of parks and gardens maintained by the Department is as follows: Curzon Park (3 divisions—8.4 ha), K.R. Hospital and Cheluvamba hospital garden (10 ha), Near Medical College—10 ha, Veterinary hospital—1.6 ha, Deaf and Dumb School—2.8 ha, Chamarajendra Technical Institute—1.6 ha, Government house—16 ha, Office of the Superintendent of Police—1.2 ha, Police hospital 0.6 ha, Police flower garden—4.0 ha, Body Guards Office —2.0 ha, Lalitamahal—4.8 ha, Nishatbagh—6.0 ha, Central nursery 4 ha, Deputy Commissioner's office—16 ha, Gorden Park—2 ha, Chamundi Guest House—1.6 ha, Jala Darshini—4.8 ha, Sanitorium—20 ha and Divisional Commissioner's office—2.4 ha. The revenue in rupees derived from parks and gardens in the district is as follows, the figures being for 1985.86 and 1986-87, the latter given in brackets: (1) By sale of seedlings—73,644 (77,263), (2) Auction sale of fallen and dead wood—18,232 (1,300), (3) Sale of Coconuts—6,796 ((6,124), (4) Lease of trees—2,233 (2,986), (5) Green fodder—1,955 (1,870), (6) Other produce—4,784 (14,540).

Horticultural Farms

The following table gives the area, important plants and revenue derived during 1986-87 from Horticultural Farms and Nurseries in the district.

Name of the Farm/ Nursery	*Extent of Farm Hectares*	*Important Plants*	*Revenue during 1986–87 in '000 Rs.*
1	2	3	4
I. Mysore Taluk			
1. Horticultural Farm, Yelachana hally	161.42	Mango, cashew, coconut.	49.99
2. Horticutural Farm, K. K. Tank, Mysore.	10.53	Coconut, sapota, guava, Jack.	57.95
II. Hunsur Taluk			
3. Horticultural Farm, Hunsur.	6.48	Coconut, sapota, guava.	21.22
4. Horticultural Farm, Karimuddanahally.	6.89	Coconut, mango	15.53
5. Horticultural Farm, Varanchi.	20.25	Mango, sapota, guava, coconut.	2.11
III. K. R. Nagar Taluk			
6. Horticulture Nursery, K.R. Nagar	1.22	Coconut	
7. Horticultural Farm, K. R. Nagar.	4.78	Coconut, pomegranate, sapota, jack, guava, citrus.	24.28
IV. Periyapatna Taluk			
8. Horticultural Farm, Periyapatna.	3.04	Guava, sapota, coconut	21.22
V. H. D. Kote Taluk			
9. Horticultural Farm, H. D. Kote	2.92	Guava, sapota, Coconut	12.05
10. Horticultural Farm, Taraka.	6.01	Gu va, coconut, sapota, tamarind, pomegranate, citrus.	5.43
11. Horticultural Farm, Kabini.	21.26	Coconut, sapota, guava.	13.13
12. Kabini Project (Ornamental) Garden, K[illegible]	36.45	Coconut, guava, sapota, citrus.	14.99
13. Horticultural Farm, Nugu.	19.85	Mango, coconut, sapota, guava, cherry, pomegranate.	59.33
14. Horticultural Farm, Beemanakolly.	79.38	Coconut, guava	0.83
VI. Nanjangud Taluk			
15. Horticultural Nursery, Nanjangud.	2.03	Coconut, guava, sapota, citrus, areca, mango.	75.98

1	2	3	4
16. Horticultural Farm, Nellikere.	2.92	Coconut, banana	8.11
VII. Chamarajnagar Taluk			
17. Horticultural Nursery, Chamarajanagar.	0.81	Sapota, mango, coconut.	1.87
18. Horticultural Farm, Suvarnavati.	8.67	Coconut, guava mango, sapota.	1.37
19. Horticultural Farm, Suvarnavati Project (Ornamental) Garden.	7.08	Mango, guava, sapota, coconut, pomegranate, citrus.	—
20. Horticultural Farm, Haradanahally.	6.88	Coconut	0.58
21. Cashew Progeny Orchard, Bagali.	118.05	Cashew, mango	154.00
VIII. T. Narasipur Taluk			
22. Horticultural Nursery, T. Narsipur.	1.01	Sapota, guava, coconut,	18.82
23. Horticultural Farm, Haralahally.	8.10	Mango, coconut, sapota, citrus, pomegranate.	3.18
24. Horticultural Nursery, Bannur.	0.81	Sapota, coconut	2.43
25. Horticultural Farm, Rangasamudra.	6.68	Sapota, guava, coconut, chilly.	52.19
IX. Yelandur Taluk			
26. Horticultural Nursery, Yeriyur.	1.48	Mango, guava, sapota.	0.42
27. Horticultural Farm, Voddagere.	3.98	Mango, guava, pomegranate.	6.94
28. Horticultural Farm. (Potato Seed Multiplication Centre) B. R. Hills.	10.03	Citrus, guava	13.01
X. Kollegal Taluk			
29. Horticultural Nursery, Kollegal.	1.48	Coconut, guava, pomegranate.	9.48
30. Horticultural Farm, Gundal Project (Ornamental) Garden.	22.93	Guava, sapota, pomegranate, coconut.	7.07
31. Horticultural Farm, M. M. Hills.	6.48	Coconut, grapes, guava sapota, pomegranate, mango.	24.88

1	2	3	4
XI. Gundlupet Taluk			
32. Horticultural Nursery, Gundlupet.	9.19	Coconut, citrus.	0.69
33. Horticultural Farm, Gundlupet.	6.71	Guava, sapota, coconut, citrus.	24.84

These horticultural farms have taken up scientific methods of cultivation of fruits and vegetables of exotic and indigenous varieties besides maintaining the varietal collection of fruits and vegetables, introduction and acclimatization work. Nurseries at taluk-level have taken up the task of raising the fruit seedlings, rooted cuttings and seedlings of plantation and spices crops, grafts, bud plants etc. to distribute them to the needy cultivators. The Department has established the Central Nucleus Vegetable Seed Production Centre at the K.K. Tank, Mysore to produce improved varieties of vegetable seeds. The farm at the B.R. Hills in Yelandur taluk is established with the purpose of producing disease-free potato tubers. At Nanjangud, the Banana Progeny Orchard is established in order to maintain the purity of Nanjangud Rasabale and to produce suckers for distribution among farmers.

Development Programmes

The Department is implementing a number of development schemes like Fruit Development Scheme, Vegetable Development Scheme, Coconut Development Scheme, Special Component Plan, Tribal sub-plan schemes etc. Under these schemes, demonstrations are laid out to convince the farmers about the scientific method of cultivation of horticultural crops. Model orchards are developed and maintained upto the yielding stage in the lands of the tribal people and these orchards will be handed over to the land owners. This scheme has been taken up in Hunsur, Heggadadevankote and Kollegal taluks.

The Department is executing the horticultural programmes in the watershed area by establishing fruit/coconut orchards. In addition, special schemes to promote horticulture under NREP, RLEGP, DPAP and CADA are also implemented in the district. Farmers of the district are getting loans and subsidies for cultivating horticultural crops like coconut, grape, betel vine under ARDC schemes through Karnataka State Co-operative Agriculture and Rural Development Banks.

In recent years, coconut crop has been threatened with the attack of black-headed catterpillar, a dangerous pest. The integrated control of b ack-headed catter pillar scheme was introduced by the Government during 1981-82. Under this scheme, six mini laboratories were established in

various parts of the district to rear and multiply the parasites for taking up biological control measures. The parasites multiplied at these mini laboratories are being supplied to farmers free of cost for release in their gardens. In addition Monocrotophos is supplied on subsidy basis.

Imparting training in the modern techniques of scientific methods of cultivation to the rural youths who actually take up the cultivation of horticultural crops is started at the Horticultural Farm at Tirumakudlu Narsipur and Beemanakolly Farm in Heggadadevanakote taluk. The trainees are provided Rs. 150 as stipend and other benefits during training period.

Horticultural crops

Mysore district is renowned for special horticultural crops like Nanjangud *rasabale,* Eranagere brinjal, Mysore betel leaves, Mysore *mallige* etc. Bangalore blue (*Vitis labrusca*) and Anab-E-Shahi (*Vitis vinifera*) are the important grape varieties cultivated in the district. The popular varieties of banana are Nanjangud Rasabale, Pachabale, Yalakkibale, Goodubale and Dwarf Cavendish. Alphanso, Pairi, Malgova, Totapuri and Neelam are the popular mango varieties. Coorg honeydew, Washington, Solo and Red Flesh are papaya varieties grown in the district. In Mysore, almost all the cultivators who cultivate arecanut will take up betel vine cultivation as an intercrop. Mysore *yele* is the popular local variety and Nagaballi, Kariyele and Madras *yele* are the other cultivated varieties of betel vine.

Mysore district is known for its flowers, jasmine, tuberose, chrysanthemum and their garlends have been held as the best by the admirers of flowers A local variety by name Mysore Mallige is the most popular jasmine grown in the district. Tuberose (*sugandharaja*) flowers have a lucrative market and the area under this flower is increasing. The district has more than 38 per cent of the tuberose cultivated area of the State. It is proposed to establish a horticultural farm at Nilasoge in T. Narasipur taluk exclusively for the production and distribution of commercial flower seeds, particularly tuberose. In addition, it is also proposed to establish tuberose growers co-operative society with an objective of increasing the area under tuberose cultivation, preservation and marketing flowers and extraction of perfume from flowers. Crossandra (*kanakambara*), marygold (*chandumallige*) and chrysanthemum (*sevanthige*) are the other important flowers cultivated in the district.

Nanjangud Rasbale variety of banana once occupied an area of more than 2,000 hectares. Its area of cultivation decreased to 800 hectares during 1960 and about 100 hectares during 1987. It is said that the disease called 'Panama wilt' was transmitted through water and soil from Kerala after the construction of Nugu reservoir. Nanjangud Rasbale cultivation is confined to Mysore district and mostly in Nanjangud, Gundlupet, Chamarajanagar and T. Narasipur taluks. Panama wilt is caused by

fungus *Fusarium Oxysporum* through root damage caused by the nematode *Radopholus similis*. The disease aggravates by high soil moisture, light soils, acidity and bad drainage. There is no effective means of chemically controlling this disease, although sanitation and use of disease free planting material can slow down the spread of the disease.

The important horticultural crops grown in the district are as follows (cultivated area in hectares in 1985-86): Mango 1,141, banana 2,443, citrus 307, guava 392, grapes 123, sapota 230, pineapple 29, pomegranate 78, jack 41, papaya 559, potato 20, tomato 1,868, cole crops 436, brinjal 2,021, peas 20, french beans 670, bhendi 470, radish 617, beetroot 28, carrot 36, tapioca 92, sweet potato 152, green leafy vegetables 1561 gourd varieties 764, rose 44, chrysanthemum 88, jasmine 151, marygold 124, michelia 63, tuberose 286, crossandra 135, aster 16, arecanut 620, coconut 17,941, cashew 327, betelvine 371, onion 480, coriander 584, turmeric 1,025, garlic 49, tamarindus 592, pepper 3,568 and ginger 27.

Area (ha) of horticultural crops during 1974, 1978 and 1983–84.

	1974	1978	1983–84
Fruits	4,376	4,403	6,067
Vegetables	5,806	4,274	8,088
Commercial flowers	176	207	650
Plantation and spices	13,463	10,999	22,874

Taluk-wise area under different horticultural crops during 1985–86

Taluk	*Fruit crops*	*Plantation and spices*	*Vegetable crops*	*Commercial flowers*
Chamarajanagar	683	5,766	563	46
Gundlupet	268	2,457	419	31
H. D. Kote	288	1,066	624	18
Hunsur	658	2,088	1,192	90
Kollegal	273	1,634	1,132	13
K. R. Nagar	257	2,100	766	163
Mysore	605	2,054	698	110
Nanjangud	1,455	5,084	1,437	57
Periyapatna	660	1,326	920	115
T. Narasipur	456	1,379	1,320	242
Yelandur	197	639	354	44
District	5,800	25,593	9,425	929

Horticultural Societies

The Mysore Horticultural Society is one of the oldest horticultural societies started in 1912 at Bangalore and its first branch was started in

Mysore City in 1953. Later branches were started at the taluk and hobli levels. Through the society, facilities like tehnical advice, planting materials, plant protection measures, journals etc. are provided to the members to develop horticulture.

A branch of the Bangalore Horticultural Producers Co-operative Marketing Society is functioning at the Curzon Park in Mysore city since 1968. The Society has many sale centres at various parts of Mysore city. It supplies fruits and vegetables to many hostels, hotels and hospitals. The department is intending to start Horticultural produce Marketing Co-operative Societies at taluk-level to create marketing facilities to the horticultural produce and about eight societies have been started in the district.

The Bangalore Grape Growers Marketing and Processing Co-operative society was started in 1958-59 and its activities were extended to Mysare district. Subsequently Fruit and Vegetable and Flower Gardeners Co-operative Society was also established. The Department is participating in the Mysore Dasara Exhibition. It organises attractive horticultural show at Curzon Park since 1985 during Dasara Festival.

ANIMAL HUSBANDRY

Livestock development plays an important role by providing gainful employment apart from providing food of high nutritive value for the health and well-being of the people. Livestrock development in the district has been undergoing revolutionary changes in recent years. Increase in hotels has given a fillip to dairying. The adoption of modern techniques of breeding, feeding, management and disease control has contributed to the enhancement of the productivity of livestock. The approach to cattle development is intensive cross breeding of indigenous cattle, using superior germplasm of exotic sires to bring about improvement in genetic potential for increasing milk production and for draught purposes. In addition fodder development, work providing inputs to farmers such as supply of root slips, cutting and seeds for taking up fodder development has also been taken up in the district. The breeding policy of sheep aims at upgrading the indigenous sheep by using pedigreed exotic rams for improved wool and meat production. As in cattle development, the district has made significant strides in poultry development. Quality control of poultry feeds has been established under Karnataka Poultry Feeds (Regulation, Manufacture and Sales) Order 1976, to make available fully balanced poultry feed to the farmers through the poultry feed manufacturers.

The Animal Husbandry Department in the days of the Vijayanagar Viceroys, was called the Karuhatti establishment. One of the viceroys of Vijayanagar is said to have brought to Shrirangapattana, some families of cattle breeders belonging to the Hallikar community together with some superior breeds of cattle which came to be known as Hallikar breed. The

Wodeyars of Mysore, notably Chamaraja Wodeyar V, Kanthirava Narasaraja Wodeyar and Chikka Devaraja Wodeyar improved the breed of cattle, assigning extensive pasture lands (*kaval*), for ranching them. The establishment got a new name, Benne Chavadi during the time of Chikkdevaraya. The cattle were also said to have been branded with the initials of the ruler's name and also their year of birth. Haidar Ali maintained nearly 60,000 bullocks in different parts of the State for draught purposes in military movements. Tipu Sultan added to these herds those of the Hagalvadi Paleyagar. The name Benne Chavadi for the department was changed by Tipu as Amrit Mahal.

In 1799, all draught cattle in the army of Tipu were taken by the British and the breeding establishment was handed over to the Maharaja's government. Later in 1813, the Madras Government took over the administration of the cattle breeding department together with all the *kavals*. In 1839 Mysore resumed the management of the Department. On 1st January 1882, the Mysore Government purchased Amrit Mahal Cattle from the Madras Government. In 1923, Amrit Mahal Department was transferred to the Department of Agriculture. Later, Amrit Mahal Department was merged with the Civil Veterinary Department and subsequently it formed a part of the independant department of Animal Husbandry created during the year 1944.

Mysore district is the home land of the Hallikar breed of cattle. The Hallikar cattle formed the nucleus of the famous breeds of draught cattle in the erstwhile Mysore State. The breeding of this type is undertaken throughout the district by individuals on a small scale from early times. The Hallikar closely resembles the Amrit Mahal. The Mahadeshwara Betta is the name given to the large cattle, found generally on the borders of Coimbatore district. The Amrit Mahal breed is very active and known for its endurance and these bullocks are specially suited for trotting and quick transport. This breed is generally poor in milk yields. Though there are no cattle breeding farms in the district, the department has undertaken various measures to improve the existing breeds.

Livestock population

Mysore district ranks fifth in respect of total livestock in the State while in respect of cattle population it had first place in the State with 9,89,235 cattles in 1983. It stands third in case of poultry.

	1966	1972	1977
1. Bovine population per sq. km.	81	82	82
2. Bovine population per 1000 human population.	519	461	409
3. No. of cows in milk per lakh of human population.	5,686	5,352	4987

	1966	1972	1277
4. No. of she-buffaloes in milk per lakh of human population.	2,294	2,173	2,028
5. No. of sheep per lakh of human population.	14,588	11,409	10,728
6. No. of goats per lakh of human population.	11,335	11,701	10,095
7. No. of pigs per lakh of human population.	190	147	184
8. No. of fowls per lakh of human population.	29,308	30,174	26,532

The taluk-wise figures of various species is given in the table in next page.

Taluk-wise cattle population as in 1983 and total figures for 1972 and 1977

Taluk	*Cattle*	*Buffaloes*	*Sheep*	*Goats*	*Pigs*	*Dogs*	*Other Livestock*	*Total poultry*
Chamarajanagar ..	78,063	16,893	16,560	15,689	146	3,359	195	47,795
Gundlupet ..	77,883	8,671	17,458	21,465	328	4,030	104	39,762
H. D. Kote ..	1,18,154	5,397	14,433	34,304	70	10,322	199	1,07,825
Hunsur ..	1,03,583	7,915	20,478	22,607	332	9,664	99	88,975
Kollegal ..	1,19,455	16,193	29,868	68,259	168	12,567	478	1,03,181
K. R. Nagar ..	89,610	26,186	34,760	18,544	520	7,495	40	1,23,025
Mysore ..	1,17,610	14,697	39,718	18,651	380	14,044	590	2,84,862
Nanjangud ..	1,10,586	17,356	34,855	29,405	935	9,130	128	77,610
Periyapatna ..	1,07,692	11,387	15,843	23,840	333	10,363	57	1,03,930
T. Narasipur ..	52,136	17,452	18,969	15,692	443	5,675	302	86,352
Yelandur ..	14,463	3,759	7,471	5,652	22	1,267	25	33,473
Total for 1983 ..	9,89,235	1,45,906	2,50,413	2,74,108	3,677	87,916	2,217	10,96290
Total for 1977 ..	8,30,703	1,47,071	2,56,619	2,41,476	4,404	NA	2,368	6,41,424
Total for 1972 ..	8,29,638	1,52,178	2,43,003	2,49,241	3,137	NA	2,723	6,48,406

Veterinary Institutions

Mysore district has two veterinary hospitals *viz.* Central Veterinary hospital and the hospital at Rajendranagar, both in Mysore city. During 1985, there were 32 veterinary dispensaries at Chamarajanagara, Arakalawadi and Ummathur (Chamarajanagar tq), Gundlupet and Kabballi (Gundlupet tq), H. D. Kote and Sargur (H. D. Kote tq), Hunsur, Bilikere, Kallahalli and Gawadagere (Hunsur tq), Kollegal (Kollegal tq), K. R. Nagara, Hosur, Saligrama, Mirle and Arjunahalli (K. R. Nagara tq), Chamundipuram and K.A.R.P. Mysore (Mysore tq), Nanjangud, Thoremavu, Hullahalli and Tagadur (Nanjangud tq), Periyapatna, Bettadapura, Ravandur and Hunsavadi (Periyapatna tq), T. Narasipura, Bannur, Talkad and Vyasarajapura (T. Narasipura tq), Yelandur (Yelandur tq). In addition there were 47 rural Veterinary Dispensaries at Udiyala, Harave, V. Chatra, Kagalavadi and Santhemarahally (Chamarajanagar tq), Alathur ,Bargi, Hanagala, Bommalapura, Terakanambi, Heggadahalli, Halahalli and Horavala (Gundlupet tq), Alanahalli, Hampapura, Madapura and K. Belathur (H. D. Kote tq), Kothegala, Chilakunda, Managodu, Dharmapura, Karimuddanahalli and Kattemalalavadi (Hunsur tq), Kowdalli, M. M. hills, Thelanur, Hanur and Lokkanahalli (Kollegal tq), Manchanahalli, Hansoge, Bherya and Hebbal (K. R. Nagara tq), Hinkal (Mysore tq), Hadinaru, Nagarle, Hanchipura, Konanuru, Edathale, Hura and Chandrawadi (Nanjangud tq), Malaganahalli, Bettadathunga, Ambalare and Bhuvanahalli (Periyapatna tq) Mugur (T. Narasipur tq), Agara and B. R. Hills (Yelandur tq).

The Key Village Centres at Chamarajanagar, Kollegal, T.Narsipur and Hunsur serve a group of about ten villages and they are meant for taking up intensive animal husbandry activities in concentrated area. The activities include artificial insemination of cows and buffaloes, castration of scrub bulls, identification and marking of animals by tattooing, milk recording, fodder cultivation, prevention and control of animal diseases, treatment of sterility and minor ailments. There are three mobile veterinary clinics at Kollegal, Gundlupet and Heggadadevanakote, eight artificial insemination main centres and six sub-centres in the district. There were 90 veterinary institutions during 1980-81 and 93 in 1985 including mobile veterinary clinics. The number of heads of livestock per veterinary institution were 28,233 in 1966, 23,124 in 1972 and 17,443 in 1977.

Mysore Dairy

Mysore Dairy was started in the year 1964 as a unit of Karnataka State Government. The dairy was modernised in 1972 with pasteuization facility to handle 10,000 litres of milk per day. In 1975, the unit was taken over by Karnataka Dairy Development Corporation. The procurement of milk (in Kilo litres per day) was 3.54 in 1975-76, 12.57 in 1976-77, 21.96 in 1977-78, 38.09 in 1978-79, 46.73 in 1979 80, 51.75 in 1980-81 and 47.98 in 1981-82. There are four milk parlours at the prominent places in Mysore

City. The quantity of milk sold during 1975-76 was 3,250 litres per day and this was increased to 49,480 litres per day in 1981-82. During 1987, the Dairy is purchasing 3.5 lakhs of rupees worth milk from dairy farmers per day. There are two chilling centres in the district, one at Chamarajanagar and another at Hunsur with the handling capacity of 30,000 litres per day and 20,000 litres per day respectively. This capacity is proposed to be increased to 60,000 litres per day at Chamarajanagar and 30,000 litres per day at Hunsur during 1988.

The new expanded Mysore Dairy was inaugurated on Aug.31,1981 and its jurisdiction covers the whole Mysore district and five taluks of Mandya district. The expansion programme of Mysore Dairy is proposed to be completed during 1988 and procurement of milk will be enhanced from 60,000 litres per day to 1,00,000 litres per day.

Mysore Co-operative Milk Producers' Union

The Mysore Co-operative Milk Producers Union Limited (MCMPU) was started in 1976 under Karnataka Dairy Development Corporation with the assistance of World Bank. The Union covers Mysore and Mandya (except Maddur and Nagamangala taluk) districts. The union has three-tier system wherein milk producers at the village level organise themselves to form dairy co-operative societies (DCS) at the village level, union at the district level and the Federation at the State level. The Federation owns and operates dairy plants, cattle feed plants, market the milk and milk products and also provide technical guidance to increase the milk production. The DCS helps farmers to market their milk efficiently avoiding the depredations of traditional middlemen. The producers are paid for their milk on the basis of fat content of the milk. As on 31st July 1986, the number of registered DCS was 703 with the total membership of 1,36,787 and share capital of Rs. 13,67,870. Total quantity of milk procured from 1976 to 1986 was 1,84,166 tonnes.

The Union under its Animal Health Care Programme will provide health care facility to all animals of the farmers who are the members of DCS. A few particulars (1976-1986) about animal health care programme are given hereunder. The number of DCS provided with veterinary services 554; number of DCS performing artificial insemination 249; number of cattle artificially inseminated 2,10,356 cows and 95,529 buffaloes; calves born due to artificial insemination 58,568; about 720 DCS staff members were trained in handling frozen semen, artificial insemination and first aid; about 598 farmers were deputed to visit the Dairy at Anand, Gujarat State. Other programmes like deputing farmers to other milk shed areas, conducting film shows, mass contact programme etc., are carried out by the Union. The farmers were induced to grow green fodder by providing free seed material. Green fodder was grown in an area of about 48,000 ha during 1986.

A few particulars about cattle breed are as follows :

Breed	*Average weight (Kg.)*	*Average Milk production litres (300 days)*	*Maximum milk production litres (300 days)*	*Average Fat content (per cent)*
Cows				
Hallikar	350–450	800– 900	1,500–1,800	5.0–6.0
Holstein Friesian	600–700	4,000–4,500	6,000–8,000	3.5–4.0
Jercy	450–500	3000– 3,500	4,000–6,000	4.5–5.5
Buffaloes				
Local	400–450	1,000–1,200	1,800–2,000	6.0–6.5
Murra	600–650	2,500–3,000	4,500–5,000	6.5–7.5
Surthi	450–550	2,400–2,800	3,500–4,000	6.5–7.0

Sheep Rearing

Mysore district with a sheep population of 2,50,413 (1983) occupies the tenth place in the State in this respect. There are four breeds of sheep namely Bellary, Deccani, Hassan and Bandur. The first three are noted for medium wool and the last for its mutton. Two exotic breeds have been introduced in the herds. The district has been grouped under meat producing sheep breed region. There is a sheep Breeder's Association at Mysore to extend extension services in the form of sheep dipping, dosing, vaccination and treatments for day to day ailments in sheep and to work as liason between members and Government agencies for the benefit of sheep breeders. Government is providing assistance in the form of aid through providing staff and technical officers.

Poultry Development

Poultry development is a highly beneficial subsidiary occupation and it provides a ready source of cheap protein by the conversion of grains and agricultural products into eggs and meat. Besides, it gives a round the year income to farmers. The poultry population of Mysore district constitutes 8.4 per cent of the total State poultry population, the district thus standing third in the State (1983). According to 1956 Livestock census, poultry strength was 5.35 lakhs and it rose to 10.96 lakhs in 1983 showing an increase of cent per cent over a period of 27 years. *Intensive Poultry Development Programme* is in operation in the district. The supply and services to poultry farmers in the IPDP area are done through co-operatives which have takenup balanced feed manufacture, supply of medicine and equipments. The Animal Husbandry Department provides the necessary technical guidance to the poultry farmers of the area.

The Regional Poultry Farm at Gundlupet and Poultry Extension Centre at T. Narasipura have been providing technical guidance and training to the private breeders in poultry keeping and other preventive measures necessary for arresting the incidence of death from infectious diseases. It is claimed that against the average yield of not more than 50 eggs per annum per layer of local breed, the exotic varieties like white leghorns, Rhode Island Reds and Mychix produce at least 150 eggs per layer. Under the Applied Nutrition Programme which was in operation in Mysore (1966-67), Heggadadevanakote (1967-68) T. Narasipura (1967-68), Chamarajanagar (1968-69), Kollegal (1968-69), Yelandur (1968-69), Krishnarajanagar (1970-71) and Gundlupet (1975-76), various Poultry development schemes were undertaken by establishing poultry units.

Animal Diseases

Non-contagious diseases do not pose a serious problem and are easily tackled by qualified personnel of the Department in the Veterinary institutions and by visiting the village. But contagious diseases like rinder pest, black quarter, haemorrhagic septicaemia and foot and mouth are being controlled both by preventive and curative measures. The number of cases treated in various veterinary institutions in the district were as follows :

Particulars	1980–81	1981–82	1982–83	1983–84	1984–85
1. Inpatients and outpatients treated.	3,49,411	2,90,630	2,95,009	3,25,480	3,09,800
2. Castrations performed.	19,314	22,637	22,787	21,438	18,610
3. Artificial inseminations.	20,898	32,511	38,388	54,291	N.A.
4. Calves born due to artificial inseminations.	4,991	7,935	9,430	16,828	N.A.
5. Surgical operations.	1,913	2,156	2,227	4,626	3,624
6. Number of inoculations.	2,99,922	3,75,579	3,10,759	2,66,890	6,69,616
7. Outbreak of :					
a) Rinder Pest	Nil	1,969	74	19	20
b) Foot & Mouth	10	—	4	—	29
c) Haemorrhagic Septicaemia	127	182	37	34	8
d) Black quarter	90	217	165	61	40

Development Programmes

Under Western Ghats Development Programme, an amount of Rs. 3.05 lakhs has been spent for rearing of cattle, supply of breeding bulls and purchase and maintenance of mobile veterinary clinics from 1978-79 to 1984-85. Under Special Component Plan which was commenced in 1980-81, 173 milch cows, 41 buffaloes, 629 sheep units, 44 poultry and 86 goat units were distributed to SC and ST farmers, incurring an expenditure of 27.68 lakhs of rupees upto 1985-86. Assistance for construction of house shed and animal feed is also made available. The assistance is by way of subsidy to the extent of 60 per cent and the remaining 40 per cent is by way of loan from commercial banks. Tribal Sub-Plan commenced in 1977-78 envisages supply of cross-bred cows, poulty, piggery, sheep and goat to tribal people. From 1977-78 to 1985-86 a total of 149 cross-bred cows, 40 buffaloes, 79 poultry units, 101 piggery units, 42 sheep units and 380 goat units were distributed. The schemes taken up under Command Area Development Authority were of infrastructure development like providing mobile veterinary clinic, introducing frozen semen for artificial insemination work, strengthening and improving the existing veterinary institutions etc.

FISHERIES

Mysore district is endowed with inland fisheries through its rivers and their tributaries, reservoirs, tanks, ponds, irrigation wells and the like. Inland fishery appears to have been wide spread and even government secured income by leasing out fishing rights by collecting *pasevaru* a tax as indicated by many inscriptions of historical times. The district has 465 km of river length, 19,731 ha of total fresh water resources comprising of 11,976 ha of tanks, ponds etc. and 7,755 ha of reservoirs. During 1985-86 the estimated inland fish production was 4.631 tonnes as against 5,271 tonnes produced during 1984-85. The inland fish seed production was 240 lakhs during 1985-86 compared to the total production of 254.70 lakhs during 1984-85. The water spread area of the three reservoirs in the district are as follows : the Nugu reservoir 1,413 ha, the Kabini reservoir 6,092 ha, and Gundal reservoir 250 ha. There are 978 tanks in the district which have an inland water area of more than 12,000 ha. There are 9,063 irrigation wells and atleast half of these wells offer good scope for fish culture. The total traditional fisherman population of the district was 13,272 in 1972 and of these 523 were full timers, 392 part-timers and 221 occasionals.

Fish culture has been taken up in the district by stocking Indian major carps and exotic carps. The Cauvery and its tributaries, once famous for their Mahseer fisheries, had suffered a certain amount of decimation due to destructive methods of fishing. In order to rehabilitate the Mahseer fish in these rivers, 0.22 lakhs of Mahseer fish seed were imported from Maharashtra to develop the fishery of this famous game fish.

Fish Fauna

Among indigenous fish *fauna* of the district, there are culturable fish, predatory fish of economic value and forage and larvicidal fish. Important amongst the cultural fishes are *Puntius carnaticus, Puntius jerdoni, Puntius dubius, Puntius curmuku, Labeo fimbriatus, Labeo cata, Labeo calbasu, Labeo nigresens* and *Labeo pangusia.* All these fishes form the fishery of great magnitude. Predatory fishes of economic value which form the next bulk catches of many of the reservoirs and rivers include *Tor tor, Wallago attu, Glassgobius giuris, Mastocembalus armatus, Ompok bimaculatus* and all the species of genus *Mystus, Ophiocephalus, Clarius* and *Heteropneustes fossilis.* The forage fish *fauna* of the district is equally rich and they are important in supporting the predatory fish population. Important amongst the forage fishes of the district are *Puntius ticto, Puntius dorsalis, Puntius stigma, Cirrhina reba, Cirrhina fulunge, Gambusia, affinis* and members of the genus *Danio, Chela, Esomus, Noemochitus, Ambasis* and *Osteobrama.*

Introduction of major carps (Gangetic carps) in Mysore waters has revolutionised the fish cultural practices. Common carps are the important exotic fishes introduced in the district and exotic carps comprised of *Cyprinus carpio communis, Cyprinus specularis, Cyprinus nudus, Osphronemus goramy, Tilapia mossambica, Carrasius carrasius, Ctenopharyngodon idella* and *Hypophthalmiethys molitrix.* The common carps are the most popular owing to their easy acclimatization, fast growth and self-sustenance in lentic environment.

Fish Farms.—There are three fish farms with a total area of 11.77 ha in the district attached to reservoirs of Gundal, Nugu and the Kabini. In 1987-88, one more farm has been established at Karimuddanahalli in H.D. Kote taluk. Fish farm is a demarcated fertile plot situated near by a perennial source of water on which are raised ponds or nurseries for production and rearing purposes. The establishment of fish farms has given a fillip for the development of the inland water fisheries. The total fish seed produced in these farms was as follows: 190 tonnes in 1983-84, 254 tonnes in 1984-85, 240 tonnes in 1985-86 and 163 tonnes in 1986-87.

Fish Farmers Development Agency.—The Government of India have sanctioned Fish Farmers Development Agency to Mysore district as a pilot project during 1973. The main object of this scheme is to involve private agencies in intensive development of fisheries in their tanks by providing incentives like loan, subsidy, training etc. This agency has shown satisfactory progress in implementing the integrated intensive fish culture programmes. Many of the Panchayat and individuals have readily come forward both for development of tank and by constructing their own fish ponds in swampy and derilict tanks.

Under the project for desilting of tanks for promotion of fisheries with the assistance of World Food Programme, 133 tanks were proposed for desilting in an area of two hectares to a depth of one and half metres in each tank. The project was in operation from 1978 to 1980 and 400 hectares of additional area was brought under fisheries production. Rehabilitation of one hundred families at Bannur in Mysore district was taken up during the Fourth Plan under the programme for rehabilitation of fishermen. Command Area Development Programme was introduced in the district at the end of Fourth Plan and the various activities envisaged under the programme include construction and improvement of fish seed production farms, development of fisheries in reservoirs, tank fisheries development and purchase of fish farming inputs and equipments etc.

Establishment of Industrial Estate for fish seed production, a novel scheme, was sanctioned by the Government during 1978 to be established at the Kabini reservoir in the district at an estimated cost of Rupees 7.74 lakhs. The main objectives of schemes include increasing fish seed production, creation of employment opportunities to qualified technical personnel and to increase fish production by stocking fish seed in more water spread areas.

The marketing activities of fish from landing centre to the inland area is being taken up by the Karnataka State Fisheries Development Corporation with the assistance of the District Fisheries Co-operative Marketing Federation. There are three fish markets in the district with Ice Plant cold storages. The district is one of the potential fish consuming centres in the State.

Western Ghats Development Programme envisaged fisheries schemes like construction of fish seed production farms, fish seed procurement, rearing and distribution, development of small water areas, tanks and reservoirs, riverine fisheries, assistance to fishermen for purchase of fishing equipments etc. Riverine fisheries development involves survey of existing fish farms, conservation of fish population and regularisation of fishing methods and stocking wherever necessary. It has been proposed to develop the Cauvery and its tributaries. The Cauvery river system has been introduced with Indian major carps which seems to have been acclimatised to this river system. During 1986-87, 106 inland tribal candidates from Mysore and Kodagu districts have been trained by the Tribal Training Centre at Kabini. They are being provided with fishery requisites worth Rupees 1,500 per group of two candidates free of cost. Tanks are being leased to these trained candidates take up fish culture.

National Co-operative Development Corporation (NCDC) has come forward to provide financial assistance for implementing the Reservoir Fisheries Project in Mysore district. A project report of Rupees 4.39 crores has been formulated and submitted to the Government of India and NCDC

for approval. The Karnataka Inland Fisheries Development Corporation which was established in 1984 with the main objective of development of inland fisheries on commercial lines, has been entrusted with inland fish seed production and developmeent of reservoir fisheries with effect from 1-2-1986.

There are 16 Inland Fisheries Co-operatives in the district, with the total membership of 4,288 and the total shares capital is about Rs. 1.39 lakhs. The activities of these co-operatives include taking leases of fisheries tanks, rivers and channels for exploitation, procurement and supply of fisheries requirement of members etc. Fishermen in the district engaged in actual operation of fishing and fish seed collection number about 542 and those engaged in other occupations number about 8,075. The number of fishing crafts and gears are as follows : Gill netters 65, trawlers 1, Liners 8, non-mechanised boats 127, drag nets 411, gill nets 350, trawl nets 23, cast nets 136, spawn collection nets 5 and others 295.

The following table indicates taluk-wise number of tanks and water-spread area in hectares and the number of persons engaged in pisciculture.

Taluk	*PWD Tanks*		*TDB Tanks*		*No. of persons engaged in pisci culture*	*Fish production in tonnes (1984–1985)*
	No.	*Water spread area (ha)*	*No.*	*Water spread area (ha)*		
Chamarajanagar	40	1,140	24	64	635	45
Gundlupet	48	1,162	15	35	450	840
H.D.Kote	16	600	102	600	360	1860
Hunsur	54	1,730	205	692	765	680
Kollegal	19	2,032	64	33	295	220
K.R.Nagar	33	1,055	97	389	810	490
Mysore	110	1,002	—	—	385	185
Nanjangud	60	1,207			745	616
Periyapatna	58	1,400	28	220	615	145
T. Narasipur	76	1,043	—	—	635	160
Yelandur	40	3,495	—	—	250	30
District.	554	15,866	535	2,033	5,945	5,271

The total fish catch in the district was as follows : 1,366 tonnes in 1979, 4,772 in 1980, 4,055 in 1981, 4,057 in 1982, 4,669 in 1983, 3,265 in 1984, 5,271 in 1985, 4,631 in 1986 and 5,124 in 1987.

Famines and Floods

Mysore district is virtually secured against famines of serious nature. The district has decided advantages over other districts in respect of irrigation facilities. The information about famines due to drought previous to the

year 1876-77 is very scanty. As per the Report on the Mysore Famine of 1876-78 "No record exists of any considerable famine due to drought having visited the province of Mysore though there were references in Buchanan to the dreadful famines which followed on the devastation committed by the armies in the invasion of Parashuram Bhao and of Lord Cornwallis at the end of 18th century". In the 19th century periods of scarcity have occurred in 1824, 1831,1851, 1865, 1875-77, 1884, 1887-88 and 1891 but Mysore district seems only to have shared the sufferings in a mere limited degree. After 1891-92, there has been no famine declared of a serious nature. In the year 1891-92, the North-East monsoon failed with the result that later crops suffered severely, fodder supply failed and the water supply became scanty. Village relief works were taken up in the taluks of Mysore, Gundlupet, Chamarajanagar and Nanjangud. State forests and Amrut Mahal Kavals were thrown open for free grazing of cattle and tank beds were given for cultivation in Chamarajanagar and Nanjangud taluks. Relief was also afforded by grant of loans to the weavers of Mysore and Chamarajanagar. The next years of inadequate rain in 1898, 1901 and 1908 did not affect the condition of the people to any great extent. In 1918, as a result of the First World War the prices of certain necessaries of life considerably increased. Coupled with this, are the adverse and very unfavourable seasonal conditions and the prevalance of influenza seriously affected the condition of the people. In 1923, South-West monsoon was very feeble and a portion of the district suffered from drought.

As soon as the first signs of distress was apparent, suitable measures of relief were taken. The sinking of temporary wells was largely resorted to. The import of fodder was encouraged and forests were thrown open for grazing. Tank maintenance, tank restoration and village improvement works were started to provide labour within the easy reach of famine-striken people. Land improvement, Takavi and Irrigation well loans were sanctioned. The first Mysore Famine Code was ushered into existence amidst the agonies of the great famine of 1876-78, and the subsequent code in 1896.

Both the state and the district are facing severe drought continuously since 1982-83, and 1986-87 was a year of slow recovery from the trauma of the severe droughts. The number of scarcity relief works undertaken and expenditure incurred in lakhs of rupees by various departments during these years (1982-83, 1983-84 and 1984-85) are as follows: Executive Engineer Karnataka Urban Water Supply and Drainage Board 229/11.42, Executive Engineer, Public Health Engineering 425/3.30, Executive Engineer, Public Works Department, 371/22.75, Deputy Director, Soil Conservation 267/18.13, Deputy Conservator of Forest, Mysore, Kollegal, Chamarajanagar and Hunsur 1.16, Block Development Officer and Tahsildar's offices 10608/1017.04. The taluk-wise figures for each year are as follows:

Statement of number of scarcity relief works and expenditure incurred in lakhs of rupees from 1982-83 to 1986-87 (by Block Development Office and Tahsildar Office).

Taluk	1982.83		1983.84		1984.85		1985.86		1986.87	
	No. of Relief Works	*Expenditure in lakhs of Rs.*	*No.*	*Expenditure*	*No.*	*Expenditure*	*No.*	*Expenditure*	*No.*	*Expenditure*
Chamarajanagar	114	1.27	367	22.55	401	26.93	369	57.11	121	38.28
Gundlupet	110	2.40	355	13.97	472	21.52	347	59.61	93	35.81
H. D. Kote	38	0.42	151	7.74	203	14.91	199	27.12	131	20.64
Hunsur	83	0.55	230	6.91	393	23.00	316	48.24	269	26.93
Kollegal	60	0.85	269	13.67	241	18.63	225	25.52	191	26.84
Krishnarajanagar	59	1.52	185	7.34	260	15.02	269	33.95	235	23.93
Mysore	69	1.30	250	13.04	384	12.20	163	38.43	114	24.22
Nanjungud	133	3.00	209	9.11	372	19.80	218	41.38	73	21.53
Periyapatna	89	0.75	170	4.41	119	12.24	232	24.81	150	20.31
T. Narasipura	23	0.65	103	4.17	257	12.38	148	35.55	120	21.26
Yelandur	36	0.93	58	3.69	179	17.60	128	16.67	55	14.43
District	814	13.64	2,347	106.60	3,281	194.23	2,614	428.39	1,552	274.18

Floods

Periodic floods in the Cauvery and its tributaries have been a major factor affecting the river valley portions of the district. Whenever rains from South-West monsoon are above normal in the west coast, the Cauvery and its tributaries are in spate. The extra-ordinary floods in the Cauvery which occurred in 1911 between 19th and 22nd July caused heavy damages to *anecuts* along the river. This is reported to be the highest known flood within the living memory of the people. The flood rose to a height of eight feet (2.4 metres) at the *anecut* and caused damage to Kalhalli and Virajanadi *anecuts*. In 1924 Cauvery was again in floods. Large tracts of agricultural fields were inundated all along the banks. Yedatore (now K. R. Nagar) and T. Narsipur, the taluk headquarters were severely effected, and some villages like Sosale, Hemmige etc. had to be permanently shifted as a result. Again in 1955, the Cauvery was in spate. The in-flow into the Krishnaraja-sagara reservoir exceeded two lakh cusecs mark in 1960.